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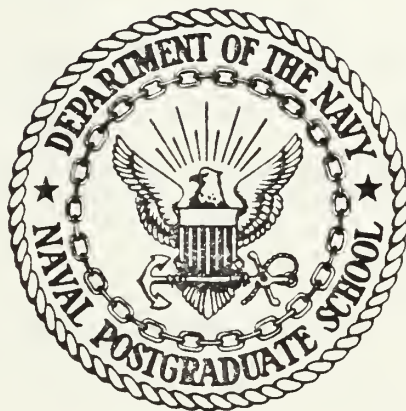
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Monterey, California



THESIS

FUTURE U.S. SECURITY IN THE CARIBBEAN:
THE CARIBBEAN BASIN INITIATIVE AND THE
ECONOMICS OF JAMAICA

Donald E. Pletcher
and
Gerhart Maas

March 1985

Thesis Advisor:

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Future U.S. Security in the Caribbean: The Caribbean
Basin Initiative and the Economics of Jamaica

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from the

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ABSTRACT

Chapter one provides a study of Jamaica during the 1970's. The outcome of this research and the associated modeling reveals that Prime Minister Manley's approach to government had some dire consequences. Chapter two provides a current view of the Caribbean Basin Initiative (CBI) along with some computer simulations which serve as a basis for future economic forecasts. The results of this research suggest several possible courses of action for the present government under Prime Minister Seaga. Fortunately, under Jamaica's present leadership, any policy which serves to strengthen the country economically, will also enhance local U.S. security interest. Chapter three discusses various aspects of Jamaican history and culture to investigate the likelihood that, if given the optimum economic recovery program, it could be successfully implemented. Finally, chapter four addresses some overall conclusions about Jamaica's economic future, the prospects of which appear hopeful under America's current Caribbean Basin Initiative.

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I. JAMAICA: THE 1970s

This thesis analyzes both the Jamaican economic performance of the 1970's, as well as, the effect the Caribbean Basin Initiative is likely to have upon Jamaica's future economic performance. Particular emphasis is given to how these economic developments will impact upon U.S. security interest in the Caribbean region. U.S. security interest are considered to be enhanced if free enterprise is allowed to function without fear of massive capital losses due to aggression by any source. This freedom includes all the various aspects of a healthy economy such as natural resources, trade routes, related foreign policy, manpower, health, and education. When these variables function freely without the need for military action or military aid, U.S. security interest are considered to be enhanced.

The first step in this study of the island of Jamaica was to present an economic analysis of the economy in the 1970's, under Prime Minister Michael Manley. Afterwhich a current assessment of the economy and the Caribbean Basin Initiative will be investigated for further analysis of the problem. The current analysis uses various computer simulations to determine which economic factors and programs would be most effectual in promoting stable economic growth.

Finally, an analysis of the Jamaican culture will be investigated to determine the likelihood that the people of Jamaica could adopt the policy recommendations set forth by this thesis. This final segment is an essential component of any assessment, the omission of which has in the past served to undermine many U.S. foreign policy programs.

A. INTRODUCTION

The relationship between the International Monetary Fund (IMF) and developing countries has tended to be volatile and frequently acrimonious. Recent writings document the controversy, breakdown, and reestablishment of relationship between the IMF and deficit countries such as Brazil, Ghana, Indonesia, Sri Lanka, Peru and Zaire to name just a few. In all cases, loan conditionality has been the core of the dispute. [Ref. 1]

During the late 1970s, Jamaica became one of the Fund's major problem cases. Twice during the 1977-1980 period, the Jamaican political leadership broke off negotiations with the IMF on the grounds that its conditions for balance of payments support were unnecessarily harsh and socially unacceptable. On the first occasion (January 1977) the crux of the dispute was the deflationary effects of the exchange rate devaluation proposed by the Fund. In April 1977, after unsuccessfully pursuing alternative financing among countries in both the socialist and capitalist worlds, the Jamaican

government reversed its position and accepted a stand-by loan from the IMF. [Ref. 2]

The second episode centered around the failure of the economy to satisfy some criteria embodied in an Extended Fund Facility loan agreement made in May 1978. [Ibid] Renegotiation of the program broke down over the IMF's requests for sizable reductions in deficit financed expenditures. At that time the Jamaican government once more announced its intention to attempt alternative solutions to its balance of payments problem.

In rejecting further relations with the IMF, Prime Minister Michael Manley noted that: [Ref. 3]

1. IMF prescriptions are designed by and for developed capitalist economies and are inappropriate for developing economies of any kind;
2. the severe suffering imposed on a developing society through IMF conditionality is endured without any real prospect of a favorable economic outcome and without an adequate foundation of social-welfare provisions to mitigate the hardships experienced by the people;
3. the notion that with IMF approval international commercial banking institutions will supplement the funds made available by the IMF is a fallacy; and
4. the punitive withholding of tranches of foreign exchange as a consequence of the failure to meet periodic IMF tests condemns the defaulting country to a worsening of the foreign exchange situation which the IMF involvement itself is aimed at improving.

Several important questions arise from this series of events. How adequate and reasonable was the IMF stabilization program in Jamaica? How feasible were the alternative

adjustment policies? And what is the feasibility of a country such as Jamaica pursuing Third World socialism while simultaneously submitting itself to a Fund stabilization program? While this chapter deals largely with the first issue, the other two questions are shown to be closely related.

In general, IMF prescriptions for developing countries have been criticized on the grounds that they are both inadequate and inequitable. Specifically: [Ref. 4]

1. The package of stabilization measures prescribed by the IMF for countries with balance of payments deficits required these to accept a credit squeeze to reduce the money supply, reduced public spending particularly on welfare services, reduced real wages, liberalized price controls, the encouragement of private foreign investment and the substitution of devaluation for tariffs and direct controls over trade.
2. The IMF claims to have a scientific basis for these policies and to be an objective and neutral institution charged with the technical function of helping countries to overcome their financial difficulties. Available evidence, including internal Fund documentation, points the other way. This contradiction is particularly clear when the Fund addresses Third World countries' balance of payments problems.
3. The IMF is not scientific because its analytical approach and policy prescriptions ignore the structural and inevitable nature of payments disequilibria that result from the development process. Its instruments were never designed to cope adequately with the development deficit problems of Third World countries, or with "shock" deficits arising out of sudden and unforeseen adverse turns in their import costs or export incomes. These phenomena are now qualitatively and quantitatively different from when the IMF was set up. To continue considering them as temporary situations, susceptible to correction through monetary mechanisms, highlights the analytical irrelevance of the Fund's policy approaches. The resulting performance tests which the Fund imposes upon deficit countries

lack scientific basis. Yet failure to comply with these tests, and the consequent penalties, disrupt economic life and politically discredit governments in Third World countries.

4. The IMF is not neutral because it systematically bases its prescriptions on market ideology, giving the preponderant role to local private enterprise and transnational investment. It envisages the state in a restrained and subsidiary role, promoting the free play of national and international market forces. The principle of state participation and intervention, involving a significant presence of public enterprises is anathema to it. Alternative development patterns that reduce or control the space for private market logic are labelled as inefficient in economic terms and considered inadequate in political terms.

Many of these criticisms have been specifically cited by Prime Minister Manley in characterizing his administration's relationship with the IMF. [Ref. 5]

B. METHODOLOGY

In examining these issues as the relevant merits of criticisms of IMF policies in Jamaica, it should be borne in mind that the design of policies for economic stabilization in Jamaica has been considerably complicated by the dynamic structure of the country's economic system. Some thirty years have passed since Phillips [Ref. 6] (1954) first showed that the application of certain types of "intuitive" stabilization policies to simple multiplier-accelerator macroeconomic models could result in undesired oscillations or instabilities. In more complicated macroeconomic models (and in the actual Jamaican economy) we find below that with complicated lag structures and the existence of several policy instruments,

the application of intuitive policies is even more likely to produce disastrous results. For example, the proper phasing of fiscal policy (which operates with short time lags) with monetary policy (operating with long lags) may not result from intuitive policy judgments and yet is critical to the success of any stabilization program. It has now become rather clear from analysis of macroeconomic policy that because of the dynamic structure of the economy, questions of both timing and magnitude are essential in formulating policies and well-intentioned policies may be unexpected and counter-intuitive results. [Ref. 7]

Therefore, as a first step in analyzing the Jamaican economy in the 1970s a dynamic simultaneous equation economic model will be developed. The value of this approach is that it allows one to treat the economy by taking into account simultaneously all of the complex interrelationships and feedback loops that exist between variables. In formulating or analyzing the stabilization policies of the 1970s, there has often been a temptation to draw conclusions from individual relationships between particular variables of interest, excluding variables or relationships that have secondary or indirect effects. This has been dangerous not so much because it has tended to aggregate or simplify the structure of the economy but because it has ignored or misrepresented some aspects of the economy's structure that play an important part in its system. The Jamaican economy is a complex dynamic

system and, as is the case with complex systems, can only be properly modeled and understood when all of the interrelationships between variables are accounted for simultaneously.

Even with the aid of an econometric model, policy formulation is a difficult problem and the means of determining a policy that is in some sense "best" may still be unclear. Part of the problem is to quantify the objectives of the policy in a precise way (assuming that the objectives are indeed known). Presumably either the IMF or the Jamaican authorities could embody policy goals and constraints in the form of an objective "cost" or "utility" functional carried over the entire time period of the stabilization program. To be consistent, either the IMF or Jamaican authorities would then have to proceed to design a policy plan that would result in the economy (or at least in the econometric model) performing in a way that is optimal with respect to the cost functional.

Once a model of the economy has been specified, a computer simulation can be used to determine and compare the results of the different IMF or government policies and one could choose a policy which, though not necessarily optimal, is better than other policies tried. Trial and error simulation is, however, an inefficient if not impossible method of arriving at a policy plan that is optimal, and a more direct approach is certainly desirable. The approach developed below is that of optimal control. In fact, the formulation

of short term stabilization policy seems particularly amenable to optimal control. A goal of this thesis will be to show that if one can work with a linear or linearized econometric model of the Jamaican economy, together with a quadratic cost criteria, then optimal control theory can provide a viable tool for analyzing and understanding the dynamic properties of the Jamaican economy, for formulating stabilization policies based on the model and for better understanding in a quantitative way the trade-offs that the Jamaican economic policy maker and the IMF were faced with during the period under consideration. Hopefully, this approach will clarify the issues surrounding the IMF stabilization programs in Jamaica during the late 1970s.

C. BACKGROUND

Many of the country's economic problems appear to coincide with the coming to office of the People's National Party (PNP) administration of Prime Minister Michael Manley (Table I). Manley was elected to office in 1972, at a time of heightened political and social tensions due to widening socio-economic inequalities and perceived foreign dominance over the economy. [Ref. 8] The PNP instituted a wide-ranging reform program which won support of the underprivileged classes, but encountered growing economic problems due in part to the world economic crisis and in part to what can only be judged in retrospect to be general mismanagement of domestic

TABLE I
JAMAICA: ECONOMIC INDICATORS 1970-1980

	Growth of Real GDP	Fixed Capital Formation GDP	Consumption/ GDP	Employees/ Wages/ GDP	Unemployment Rate	Consumer Price Increase	Net Foreign Reserve (Million J\$)
1970	11.9	31.4	72.7	52.4	n.a	7.7	94.4
1971	3.1	27.8	75.0	49.9	n.a	5.3	131.1
1972	9.3	25.5	81.0	52.4	23.0	5.4	87.2
1973	1.4	25.8	78.3	54.1	22.0	17.7	34.3
1974	-4.1	22.0	86.0	54.3	21.2	27.2	79.5
1975	-0.6	23.3	84.7	55.8	20.5	27.6	-10.8
1976	-6.1	16.6	90.6	56.8	22.1	9.9	213.9
1977	-1.7	11.7	89.3	55.9	24.2	11.5	-246.0
1978	-0.4	13.3	83.6	52.1	24.5	34.9	-625.5
1979	-1.5	17.4	82.7	51.0	27.0	28.9	661.2
1980	-5.4	14.5	86.6	51.4	30.6	27.0	-560.8

Sources: International Monetary Fund, International Financial Statistics, Yearbook, 1983
Bank of Jamaica, Statistical Digest, various issues.
Department of Statistics, National Income and Product, various issues.
Department of Statistics, Statistical Yearbook of Jamaica, various issues.

economic policy. Key indicators of the decline over the PNP period 1973-80 were:

1. real GNP down by a fifth;
2. manufacturing down 30 percent;
3. construction down 77 percent;
4. net international reserves, minus US\$150 million (1981);
5. inflation 27.3 percent (1980);
6. living standards minus 29 percent;
7. crime plus 57 percent.

These statistics were particularly devastating in that historically Jamaica is anything but a Caribbean Bangladesh. Even today in the aftermath of the decline, its per capita GNP of US\$1,300 places it well up in the World Bank list of middle income countries. During the 1960s, the country had been doing very well--its export markets were bouyant and the multinationals were eager to put money into the country's resource industries. Average GNP growth was a highly respectable 4-6 percent. [Ref. 9]

As Brown has indicated, the main characteristics of the mid-1970s (particularly beginning in 1975) included a highly unstable political climate; spiralling wages and prolonged industrial disputes; changes in the structure of government budget and rapid expansion in government expenditure, and emigration of persons and capital. According to Brown, [Ref. 10] it is difficult to overestimate the unfavorable effects of the apparent fragmentation in political direction on business confidence and economic activity, particularly in the context of the difficult economic conditions which prevailed: [Ibid]

"It is not at all clear that this instability resulted from the fact of the initiation of a strategy of democratic socialism, so much as the manner of its implementation, the absence of clear policy guidelines and the denigration of private capital which threatened the security of large and small businesses. In so far as small businesses are maintained on the spinoffs or trickle down effects of the activities created by large businesses, a reduction in big business activity was soon reflected in lagging activity in the small business sector."

More importantly, the apparent ambivalence, or even contradiction, in political strategy was mirrored in the failure to settle what was in fact a crucial issue of new economic policy. This is the relation between policies to redistribute incomes and policies to induce growth. It is not apparent that the Manley government was ever able to answer with any kind of quantification issues surrounding fundamental economic policy, such as: [Ibid]

1. Under what conditions does the attempt or the failure to redistribute income retard growth?
2. How is the trade off between growth and distribution affected by the kind and range of policies chosen and by their timing and implementation?
3. How is the pace of redistribution affected by conditions for growth and overall rate of growth?
4. What investment strategies and policies are necessary to support a policy of redistribution and maintain or increase the growth momentum?

In any case, fiscal policy was decidedly expansionary in the mid-1970s with government recurrent and capital expenditures increasing by 61 percent in 1974/75 and then by a further 36 percent in 1975/76 (Table II). Government revenues could not keep pace with the rapid growth in expenditures, even though the bauxite production levy receipts were transferred from

TABLE 11

JAMAICA: FISCAL INDICATORS, 1972-1979

(in current prices)		1972	1973	1974	1975	1976	1977	1978	1979
Percentage									
Government Expenditures/GDP		25	26	33	38	46	41	40	45
Overall Fiscal Deficit/GDP		5	6	10	13	24	19	13	20
External Expenditure/GDP		9	11	13	16	18	18	32	33
National Income/GDP		18	18	18	18	25	44	44	45
External Debt Services/GDP		1.1	0.9	2.3	2.9	3.7	4.4	9.2	8.7
Increase over previous financial year		1972/73 -1973/74	1973/74 -1974/75	1974/75 -1975/76	1975/76 -1976/77	1976/77 -1977/78	1977/78 -1978/79	1978/79 -1979/80	
a. Central Government Expenditures		23	61	36	27	-1	23	27	
b. Central Government Revenues and Capital Development Fund		22	48	24	-5	8	58	30	
c. Overall all Fiscal Deficit (a-b)		26	108	66	88	-11	-16	77	

Source: Ministry of Finance, Financial Statements and Revenue Statements (various years); Department of Statistics, National Income and Product (various years).

the Capital Development Fund. In fact, the government spent its increased bauxite revenues on non-investment activities aimed at providing greater social services, increased employment and further public ownership and control of production rather than on their originally intended use of investment for structural adjustment in the non-mining sector of the economy. [Ref. 11] The net result of movements in expenditures and revenues was an acceleration in the fiscal deficit, increasing by 108 percent in 1974/75 and 66 percent in 1975/76.

Coinciding with these trends in the international economy and domestic policy was the development of a major international payments problem. The overall balance of payments [Ref. 12] measured by changes in official reserves, moved from a surplus of J\$36 million in 1971 to a deficit of J\$44 million in 1972. Deficits persisted thereafter reaching the alarming level of J\$238 million in 1976. The current account deficit widened from J\$145 million in 1970 to J\$275 million in 1976. Private net capital inflows, which historically performed an equilibrating role, became increasingly inadequate after 1970 and practically ceased by 1976. For awhile, government foreign borrowing helped to offset the decline in private capital inflows, but in 1977 government debt payments exceeded new debt inflows by J\$5 million. As a consequence of these trends, the economy rapidly lost international reserves. Net foreign assets of the central

bank amounted to J\$137 million in 1910, contracted somewhat during the next two years, recovered to \$141 million in 1974 and then fell sharply and continuously. By December 1977, net foreign reserves were minus J\$171 million. The large negative foreign reserve balance was the net outcome of a reduction of gross foreign reserves from J\$168 million in 1974 to J\$43 million in 1977 and a growth of gross foreign liabilities from zero in December 1972 to J\$214 million in December 1977.

Fiscal policy or the rapid growth of government consumption expenditures (Tables III, IV) must be considered a major factor underlying Jamaica's trade and payments problem. [Ref. 13] As Girvan, et. al. [Ref. 14] have noted:

"Government expenditure grew at an extremely high rate, averaging 32 percent per annum in the five financial years from 1972/3 to 1976/77....The growth in expenditure was partly due to deliberate Keynesian inspired fiscal expansion, the effect of inflation on recurrent expenditure, lack of strict financial accountability in the state bureaucracy and political pressures. Contradictions within the ruling PNP led to a tendency to alleviate the social effects of the crisis by increased expenditure, rather than tackling the underlying structural problems, and the political pressures of an election year (1976) contributed to the failure to control public expenditures."

The excess demand for consumer, intermediate and capital goods that could not be met from local production or imports, resulted in higher domestic prices and shortages. Substantially higher real wages added to the costs of production and, together with domestic inflation and a fixed exchange rate, squeezed profit margins and discouraged the production of exports and inflow of foreign investment. Given a constant

TABLE III
JAMAICA: TRENDS IN MACROECONOMIC AGGREGATES, 1969-1976

(% of Gross Domestic Product)	1969	1970	1971	1972	1973	1974	1975	1976
Government Consumption	10.3	11.7	12.4	13.7	16.2	17.8	18.3	20.7
Private Consumption	61.2	60.9	62.6	67.3	62.1	68.2	66.4	70.1
Total Consumption	71.6	72.7	75.0	75.0	81.0	86.0	84.7	90.6
Savings	23.8	23.0	21.0	13.9	20.3	12.8	17.3	10.2
Total Investment	35.2	31.5	32.1	27.3	31.2	24.2	25.6	18.2
Imports	43.5	37.4	40.9	41.1	40.8	45.7	45.4	37.6
Exports	36.8	33.2	33.8	32.8	31.3	35.5	35.1	28.8
Internal = External Gap	-11.3	-8.6	-11.1	-13.5	-11.0	-11.4	-8.3	-8.1
Domestic Absorption	106.7	104.2	107.1	108.3	109.5	110.2	110.3	108.8
External Absorption	-6.7	-4.2	-7.1	-8.3	-9.5	-10.2	-10.3	-8.8
Total Supply	143.5	137.4	140.9	141.1	140.8	145.7	145.4	137.6

Source: Computed from Table

TABLE IV
JAMAICA: INTERNAL AND EXTERNAL BALANCE 1977-1982

(% of Gross Domestic Product)	1977	1978	1979	1980	1981	1982
Government Consumption	20.5	19.9	19.5	21.3	21.4	22.9
Private Consumption	68.9	63.6	63.2	65.3	67.8	68.9
Total Consumption	89.3	83.6	82.7	86.6	89.2	91.8
Savings	7.5	21.9	11.4	20.1	5.4	3.3
Gross Fixed Capital Formation	11.7	13.3	17.4	14.5	18.2	20.3
New Factors Payments	-3.3	5.4	-6.0	6.7	5.4	4.9
Imports	32.5	40.5	49.6	53.0	58.4	52.1
Exports	31.0	41.9	48.0	51.0	47.9	39.9
External = Internal Gap	-4.7	6.8	-7.5	4.6	-15.9	-17.1
Domestic Absorption	101.5	98.7	101.6	102.1	110.5	112.2
External Absorption	-1.5	1.3	-1.6	-2.1	-10.5	-12.2
Total Supply	132.5	140.5	149.6	153.0	150.4	152.1

Source: Computed from Table

exchange rate, a growing consumption rate and the exemption of government transactions from most import restrictions, excess demand for imports by the private sector is likely to have increased during this period. [Ref. 15]

According to Bonnick [Ref. 16], however, "it is difficult and probably impossible to quantify the effect of the pressure of domestic demand on Jamaica's current account deficit." His reason for such a conclusion is that, [Ibid] "the impact of growing demand on the deficit will depend on what is happening to the regime of tariffs and/or the more restrictive the import quotas, the more the pressure of domestic demand results in higher prices and/or shortages rather than higher imports." It is a fact that after 1972 Jamaica not only increased tariffs and intensified quantitative restriction, but moved to a system of import quotas within an overall ceiling on imports. This system increasingly insulated the current accounts from the pressures of domestic demand.

Expansionary fiscal and monetary policies did, however, contribute to inflation in this period. The annual increase in total domestic credit (Table V) far exceeded the growth of GDP in current and constant prices and this was mainly the result of the rapid growth in public sector credit to finance the widening fiscal deficits and ambitious public spending program. The overall fiscal deficit (excess of domestic recurrent and capital revenues over expenditures) increased from 5 percent of GDP in 1972 to 24 percent of GDP by 1976

TABLE V

JAMAICA: MEASURES OF INFLATIONARY PRESSURES, 1970-1980

	(% Increase)				Quasi Money	Domestic Credit		
	GDP in Constant Prices	GDP in Current Prices	Consumer Price Increase	Money Supply (M1)		To Government (Net)	To Private Sector	Total
1970	11.9	17.9	7.7	14.0	18.2	394.1	14.4	20.2
1971	3.1	9.6	5.3	26.3	23.1	75.8	17.1	20.9
1972	9.3	12.2	5.4	7.9	14.6	84.2	27.9	37.2
1973	1.4	20.6	17.7	26.5	1.0	20.3	13.0	16.2
1974	-4.1	25.0	27.2	18.2	19.2	-33.3	17.1	8.7
1975	-0.6	20.5	17.4	24.9	18.0	270.8	16.4	42.4
1976	-6.1	3.9	9.9	5.0	10.5	102.4	-3.0	26.9
1977	-1.7	10.3	11.5	40.2	2.0	41.0	-12.4	11.8
1978	-0.4	25.7	34.9	20.1	16.7	35.5	20.1	28.7
1979	-1.5	14.3	28.8	10.1	19.3	68.4	18.4	45.6
1980	-5.1	10.7	27.0	13.9	25.1	-6.6	16.5	4.9

Source: International Monetary Fund, International Financial Statistics Yearbook, 1983.

and that up until 1975 much of the deficit was financed by external public borrowing. At the same time, domestic credit to the government sector expanded five fold in 1971-76, and the share of domestic credit going to the public sector more than doubled from 14 percent to 35 percent of total domestic credit over the same period.

It is obvious that a very large number of factors led to the deterioration in Jamaica's balance of payments. The causes were undoubtedly both external and internal, for example, the exogenous worsening in the country's terms of trade or the inappropriate stance of domestic policies in the 1970s which resulted in an excessively rapid expansion of aggregate domestic demand.

As noted, there is considerable dispute in the Jamaican literature [Ref. 17] concerning the relative importance of the contributions of internal and external factors to that country's economic instability during the 1970s. It can hardly be disputed that during the past decade exogenous factors--the four fold rise in energy prices in 1973-74, the weak economic performance of the industrial economies since 1974 and the further increase in energy prices in 1979-80 were major contributors to the country's adjustment problems.

Nevertheless, it is apparent that a combination of inflationary demand management policies, restrictions on trade and payments, and rigid exchange rate policies also contributed to a cumulative loss of competitiveness and consequent balance of payments difficulties.

It is particularly important to examine these causes of Jamaica's balance of payments problems since the appropriate cure for disequilibrium depends on whether the origin is exogenous or endogenous to the domestic economy. [Ref. 18] The macroeconomic model developed below is an attempt to quantify these relationships.

D. CONSIDERATIONS IN MODEL SPECIFICATIONS

As with Jamaica, most developing countries have at one time or another faced the twin problems of a high domestic rate of inflation and a deficit in the balance of payments. As noted, in Jamaica's case during the 1970s, the cause of at least part of these problems can be traced to increased government fiscal deficits that resulted in excessive monetary expansion which in turn increased domestic demand. One purpose of the stabilization programs was to reduce these pressures. Both Jamaican and IMF policy makers recognized that the implementation of these programs would have simultaneous effects on output, inflation and the balance of payments. While attempts were made to make allowances for these effects in qualitative terms, relatively little was known in the Jamaican context about the precise quantitative nature of the relationships among these major economic aggregates. This lack of knowledge of course created considerable problems when policy makers wished to assess the effects of a particular policy initiative--for example, a devaluation of

the Jamaican dollar. Similarly, lack of information on the impact and interaction of many macroeconomic variables made it difficult to derive the appropriate policy objectives to achieve specific stabilization objectives.

This point is important because it is not clear that the IMF, prior to introducing the stabilization programs in the late 1970s, had undertaken any quantitative macro-analysis of the main economic forces at work in Jamaica. What follows is an attempt to identify the key elements in the IMF's approach to the Jamaican economy, together with an analysis of some of the apparent limitations to the Fund's method of stabilization.

The IMF analysis of the mid-to-late-1970s economic crisis can be gleaned from the various reports done by the Fund on the Jamaican economy. [Ref. 19] In general, the reports reflect the Fund's usual monetarist approach to the balance of payments problem. Four major causes of the crisis are identified by the Fund:

1. excessive demand,
2. excessive monetary expansion,
3. overvalued exchange rate, and
4. excessive wage charges.

It is clear from monetarist logic that all four elements are connected. The scenario emerging is that the monetary expansion resulting from the government's deficit spending led to excessive demand mainly for imports. Secondly, the excessive wage increases apart from increasing consumption

of imports, led to an overvalued currency thus reducing the country's competitiveness. This, according to the IMF, is what led to the reduction in export receipts and the increase in imports thus causing the balance of payments crisis.

The IMF's analysis of the crisis of the Jamaican economy is set out in its July 1977 report on the economy which accompanied the request for a Stand-by arrangement. [Ref. 20] After briefly stating that "Jamaica has been facing a serious balance of payments crisis since 1972" the Fund's analysis concludes that "at the root of these difficulties was a rapidly growing government deficit," and concurrently with this growing deficit the document goes on to note that "there was a sharper wage push which led to increases in cost that exceed by substantial margins the increases in those of Jamaica's trading partners, putting into serious jeopardy the competitiveness of the economy."

The Fund therefore took the view that developments in the world economy played little if any role in the crisis of the economy. [Ref. 21] To develop this position further and to be consistent with the traditional IMF position, the analysis stated that government expenditure to cure the unemployment situation, which rose from 12 percent to 23 percent between 1962 and 1972, "while it did assist in increasing employment, it did not lead to any increase in domestic production and set in motion serious demand pressures reflected in balance of payments deficits." [Ref. 22]

In general, IMF policies outlined below emphasized speedy adjustment, defined in terms of external balance through reductions in domestic incomes and expenditures. The various monetary conditions were seen by the Fund as a means to this end.

For purposes of this analysis, the Jamaican government's involvement with the IMF began in 1977. Net foreign reserves, which stood at J\$138.6 million at the end of June 1975 and which fell to J\$58.5 at the end of December, fell further to minus J\$1.9 million in March 1976, and by the end of September of that year were as low as minus J\$102 million. As repeated attempts to increase official inflows failed, the government finally came to terms with the IMF and signed a two year Stand-by facility in July-August 1977. On balance, the government appeared to have settled on terms which reflected its own policies. In particular, the dual exchange rate was maintained as were price controls and subsidies. Employment and social welfare programs were not fundamentally altered. Wage policy, however, required reductions in the rate of wage increases under loose wage guidelines, rather than a freeze on wages.

Under this agreement, a total of US\$79.6 million would be available over the two years to June 1979. Given either the usual level of inflows or the external financing actually required, it could not be assumed that the amount of finance under the IMF program would be adequate to stimulate economic

recovery. Rather, the fact of the agreement was expected to be the lever for additional inflow under the auspices of the IMF.

The agreement was circumscribed by tests relating to:

1. net foreign assets of the central bank;
2. net banking system credit to the public sector and outstanding arrears; and
3. limits to new external medium and long term borrowing.

This agreement was terminated in December 1977 when the target for domestic credit expansion was not met.

Brown has concluded that the failure of this program was due to the fact that the economy was in a slump and capital was flowing out. The program's curtailing of aggregate demand worsened the slump while interest rate policies had no effect on stemming capital inflows or inducing net inflows. "Further the merchandise account was already subject to direct controls. Foreign exchange controls as well as controls over foreign borrowing and in the domestic market were also in effect. The agreement on the details of monetary policy, including the limits on new public external borrowing as well as the absence of any policies to induce investment meant that the effective model was the IMF model. The point of the IMF tests was to reinforce this, whatever else appeared to have been allowed. The only way out was to raise the level of investment. But the government had no investment policy and monetary policy further depressed private domestic investment, especially in small business." [Ref. 23]

At the end of 1977, there was a drastic decline in the current account deficit. Merchandise imports were less than merchandise exports, at very low levels of capital inflows. This was itself a problem "since production could not recover at the level of imports." The decline in reserves was J\$14.6 million compared with a decline of over J\$42 million at the end of 1976. "The problem however remained one of low activity, the falling rate of investment, and increasing capital outflows." [Ibid]

Negotiations were initiated for a new agreement with the IMF. This was signed in May 1978. This new agreement under the Extended Fund Facility, was applicable to a higher credit tranche and required more rigid conditions. The agreement covered a three year period and allowed a total of US\$240 million.

The terms included:

1. unification of the dual exchange rates, and a devaluation of 15 percent at the beginning of the program and monthly mini-devaluations of one to one and one half percent for twelve months;
2. price liberalization and limitations on wage increases (including overtime and fringe benefits) to a maximum of 15 percent over the first two years;
3. increased taxes to yield J\$180 million in fiscal year 1978/79, a reduction in government expenditure to yield current account savings equal to 21 percent of capital outlays, increased prices of public utilities;
4. the monetary measures instituted to ensure meeting the tests and in particular the net domestic assets test were:

- a. amendment of the Bank Act to allow the commercial banks' liquid assets ratio to be raised to 40 percent, with the period of notice reduced to fifteen days from thirty;
- b. a ceiling equal to 10 percent above the amount in May 1978 on commercial banks' loans and advances to the private sector; this was further reduced to 5 percent early in 1979;
- c. commercial banks to be required to set aside cash reserves to the equivalent of foreign payments arrears and pending payments with an exchange rate guarantee.

Selective exchange rate guarantees were also suspended. This was clearly a deflationary program. The emphasis was on reducing domestic consumption and increasing exports, so as to improve the external account. Wage restraint and a series of monthly mini-devaluations which were scheduled to run until May 1979 were expected to improve the competitiveness of the export sector. A necessary assumption was that net capital inflows would increase considerably.

The stabilization program planned for a fall in public and private consumption expenditures and an increase in fixed investment expenditures as a percentage of GDP. [Ref. 24] Gross investment was projected to increase from 10.4 percent to 21.8 percent of GDP over the three year program period and government capital expenditure was to be financed not by credit creation but by appropriate increases in the government and private sector's savings ratios.

Government revenue was planned to increase from 22.5 percent of GDP to 28.1 percent, and government current

expenditure to decline from 23.7 percent to 20.2 percent. Correspondingly, it was intended that the budget deficit would decrease from 13.4 percent to 4.5 percent and government savings would increase from minus 1.3 percent of GDP to 7.9 percent. By imposing wage guidelines which limited increases in gross labor remuneration to 15 percent per annum over a two year period, and by decontrolling prices, the program sought to increase the level and the share of profits thereby augmenting domestic financing capacity. In addition, the removal of subsidies from goods and services produced by the public enterprises and corresponding increases in their prices were intended to reduce public consumption and improve the profitability of public enterprises. Altogether, the program planned for an increase in domestic financing of investment as a proportion of GDP from 7.6 percent in 1978 to 19.4 percent in 1981. Greater dependence on foreign financing of gross accumulation was not envisaged.

In May 1979, and after the tests were met, the government requested a revision of the agreement in order to obtain financing under the Supplementary Financing Facility. The terms which were similar to those under the 1978 agreement included limits on new external borrowing (Table VI).

By September 1979, it was clear that there would be difficulty in meeting the targets. Domestic credit expansion to support the government budgetary deficit had exceeded allowable amounts. Discussion between the government and the

TABLE VI

JAMAICA: IMF TARGETS AND PERFORMANCE

Indicators	Base March 31 1978	June 30 1978	Sept 30 1978	Dec 31 1978	Base March 31 1979	July 15 1979	Oct 31 1979	Jan 31 1979
Net Foreign Assets of BOJ (US \$ Million)								
Ceiling		-335.0	-300.0	-300.0		-425.8	-425.0	-370.0
Actual	-317.0	-318.3	-279.0	-289.5	-319.1	-381.6	-419.6	-496.7
Outstanding Arrears (US \$ Million)								
Ceiling	-	80.0	60.0	40.0				
Actual	82.0	79.2	48.8	30.4				
Net Domestic Assets of BOJ (J \$ Million)								
Ceiling	-	440.0	445.0	480.0	-	500.0	925.0	940.0
Actual	403.0	405.2	393.6	424.6	708.2	866.9	924.5	1,064.1
Net Bank Credit to Public Sector (J \$ M)								
Ceiling	-	390.0	1,010.0	1,110.0	-	1,070.0	1,105.0	1,125.0
Actual	841.0	856.8	687.0	1,021.5	992.4	1,059.4	1,072.2	1,265.0
Foreign Borrowing Authorization (US \$ M)								
1-5 Years Ceiling						60.0	60.0	60.0
Actual						0.9	4.5	12.5
1-12 Years Ceiling						110.0	110.0	110.0
Actual						0.9	21.2	41.1

Source: Bank of Jamaica, Balance of Payments of Jamaica, 1977-1978, 1979.

IMF centered on ways to retrieve the situation. Drawings under the Extended Fund Facility were interrupted pending the outcome of the negotiations. In March 1980, the government opted to break off negotiations with the Fund.

Brown's interpretation of the background to the foreign exchange crisis as well as the explanation of the slump in domestic economy provides some understanding of the failure of the program to effect improvement in the domestic economy: "Consumption and real output declined while price increases exceeded those of the mid-1970s. That neither investment nor net capital inflows increased could hardly have been unexpected. The economy was depressed and the improvement in the merchandise account which had occurred since 1977 was due to the control of imports and the reevaluation of export receipts, consequent on devaluation. The overall balance on current account worsened in spite of continuing increases in net receipts from foreign travel as investment income and other current account inflows increased." [Ref. 25]

It has also been argued that the amount of foreign exchange supplied in support of the IMF program was unrelated to either the size of the deficit or to the conditions governing the capacity for adjustment. Yet, the extent of financing available can determine the speed of adjustment and, therefore, the extent of the necessary decline in income. "The inadequacy of IMF balance of payments support, combined with the conditions which were imposed serve to force the pace of adjustment." [Ref. 26]

Critics contend that the Jamaican experience supports the view that the relative inadequacy of balance of payments support, coupled with the existence of an arbitrariness involved in the use of the tests, in fact reduced the policy choices available to the country and are an important means of imposing IMF economic strategy. According to this view, the IMF attempted to impose an export-led strategy, and the policies therefore implied a shift of resources towards export. The government was in fact trying to change this strategy largely because of the income and investment concentration associated with previous policies. At the same time, however, government policy offered no comprehensive set of measures aimed at effecting these changes. This no doubt limited the negotiating leverage which the government might have had. So far as can be ascertained, for example, the policies adopted in the 1977 agreement maintained the main points of the government program.

The major points at issue in the Fund's programs appear to have been the exchange rate, wage policy and fiscal expenditure. These were all important adjustments to the policy framework of the IMF. "Their effectiveness was, however, reduced by the monetary measures with which they were combined by the structure of the government's expenditures as it related to investment and the creation of investment opportunities and the failure to use rising wages as a mean to increase investment. Once that was the case, the aggregate

money model became the operative part of the program. The tests then only reinforced the rigidity of the model."

[Ref. 27]

Based on the above analysis of the Fund's experience in Jamaica, several conclusions can be drawn for the purpose of constructing a macroeconomic model of the economy.

First, most economists would probably accept the general proposition put forth by the IMF that monetary expansion will not only create inflationary pressures and cause the balance of payments to deteriorate but also, particularly when it is unanticipated, increase real income. However, the actual operation of the transmission mechanism in developing countries such as Jamaica and the relative size and timing of the effects of a change in policy are a matter of considerable doubt.

Second, there is not extensive literature on some of the more important individual macroeconomic relationships. For example, substantial work has been done in the context of developing countries on the links between monetary growth and inflation, [Ref. 29] and between money and the balance of payments. [Ref. 30] A relatively smaller number of empirical studies have also been made of the relationship between money and growth. [Ref. 31] However, systematic analysis of these various relationships for Jamaica is only at the very preliminary stages. Models have been specified and estimated [Ref. 32] for the country but it is difficult to generalize

these results because of differences in model specification, estimation methods and periods of estimation. [Ref. 33]

Third, as noted there has been only limited formal quantitative analysis of the effects that a stabilization program may have on the Jamaican economy. This of course has considerable implications for the IMF's lending operations in Jamaica since the relationships just mentioned figure prominently in the stabilization programs that have been agreed to by the Jamaican government.

On the basis of the above considerations, evaluation of the IMF programs in Jamaica together with the criticisms of these efforts, requires a macroeconomic model with a framework where there is a fairly well-defined relationship between money, the balance of payments and domestic prices, in which the supply of and demand for money play a central linking role. The effects of policies on the real sector should also be treated explicitly.

If feedbacks from real output can be taken into consideration, the analysis should be able to determine whether a given financial program will have undesirable consequences for growth and employment, something that has particularly concerned Jamaican policymakers and commentators.

Generally treating output as independent of monetary or credit factors has been rationalized on the grounds that the typical IMF-type stabilization program is essentially of a short term nature and that in the short run one can assume

that the domestic supply of resources is effectively fixed. There is some empirical evidence supporting this view. For example, Richman and Stillson, [Ref. 34] after examining a number of Fund Stand-by arrangements over the period 1963-72, conclude that "one cannot observe a systematic relationship between the introduction and implementation of programs and rates of growth in the short run." This conclusion, however, does not distinguish between the rate of growth of capacity output and the rate of capacity utilization, and the latter could be affected even in the short run. Furthermore, in view of the extension of the time span of Stand-by arrangements that occurred in Jamaica, this rationale can no longer be relied upon. In short, the growth problem must be explicitly introduced into the model.

The above analysis of the Fund's program in Jamaica also showed that while the principal objectives of the stabilization program may be reduce the inflation rate and improve the country's external payments position, the policies followed will have repercussions on the other variables in the economy, some of which may be desirable and some not. Yet these other effects have been clearly major concerns of Jamaican policymakers. For example, restrictive monetary policies may have involved an unwanted temporary loss of output, even though eventually these policies significantly reduced inflation and improved the balance of payments.

As another example, it has been argued that as real output and income continued to fall in the late 1970s the deflationary measures introduced, while restricting imports, failed to improve the balance of payments since there was a corresponding deterioration of the capital account and associated investment income account. "The capital account reflected instability which was only worsened by repeated deflationary measures. Each round of income reduction would, therefore, necessitate new deflationary measures as capital inflows failed to increase and outflows on current and capital accounts continued." In short, although the deflationary measures were designed to restore stability by restraining aggregate demand and thereby reduce inflation the crux of the problem was the failure of investment which was itself related to the decline in capital inflow. [Ibid]

The size of this loss of output and the period over which it occurred was of overriding importance to the authorities in Jamaica from both economic and social perspectives. In fact, it is possible to argue that the Fund's programs of deflationary policy had little initial effect on prices, but caused a substantial slowdown in the growth of real income and employment. Such a result if it did in fact occur would depend on the relative sizes of the various parameters in the system and the time lags involved in the response of variables to policy changes. The question that arises is whether there were any combinations of private sector

behavior and government policy that possibly gave rise to this result in the Jamaican context.

For example, it is possible in the Jamaican case that some of the decline in income in the 1970s was the result of the simultaneous attempt of the government to step up the pace of income redistribution while counteracting the effects of the external account on total income and employment (at a time when capital inflows were being reversed and real output growth was negative). It is likely that there were not sufficient policy instruments to meet all these objectives at the same time. Brown has argued that the limitations on the range of effective policy instruments was partly a consequence of the structure of the economy and of the development policies which had been pursued since the 1950s. "Of particular importance was the constraint imposed by the requirements of an industrialization program based on imports and capital inflows. Since maintaining growth dynamic depends on the flow of imports, the attempt to control the balance of payments deficit directly through the merchandise account can often only be achieved in the short run at the expense of maintaining the stimulus to growth. Further, since the flow of imports depends on capital inflows, an important priority of balance of payment policy must be to maintain stability in the capital account." [Ref. 35]

Quantification of the issues discussed above requires a dynamic model that can simultaneously capture the major

relationships between prices, the balance of payments and output. The purpose of the remainder of this paper is to propose a formal framework for examining these interrelations, and more important, to use this framework to analyze the effects of policy changes on all these variables. In a sense, the model can be viewed as providing one particular interpretation of the basic theoretical paradigm underlying the Fund's stabilization program in Jamaica. Within the context of the simple dynamic model developed here, questions regarding the effect stabilization programs on resource utilization in both the short run and the long run can be handled. Such an analysis is important, since the time pattern that the variables follow during the course of a stabilization program may in the Jamaican context have been just as crucial as the positions they ultimately reached.

The model proposed here, although highly aggregated and simple in structure, is nevertheless able to meet this main requirement. It stresses the crucial role played by the demand for money and monetary disequilibrium in the behavior of such major macroeconomic variables as prices, output and the balance of payments. Thus, the analysis can be considered a generalization of the models developed in the context of the monetary approach to the balance of payments and is also consistent with the philosophy underlying the financial programming approaches followed by the Fund. Perhaps as important, it attempts to quantify the extent to which

external factors may have significantly undermined the government's stabilization attempts. Also, the model differs from the usual monetarist approach to the balance of payments in two important regards. First, a distinction is made between the current account balance and the overall balance. Second, to determine the interaction between government policy and private sector response, several factors linking government and private expenditures are introduced.

While monetary factors are assigned a major role in the model, it is explicitly recognized that the money supply is not necessarily under the close control of the Jamaican authorities. By definition, the domestic money equals the net foreign assets of the consolidated banking system plus bank credit to the government and the private sector. As is well established, in a small open economy operating under a system of fixed exchange rates (which is a description that would fit Jamaica during this period), changes in the money supply can be brought about through movements in the balance of payments.

Furthermore, since Jamaica lacks a developed capital market, the growth of domestic credit may be closely linked to the government's borrowing requirements and hence to its fiscal policy. In this model, fiscal policy (specifically expenditures) is the relevant policy instrument by which the authorities seek to achieve their objectives and it is the domestic component of the money stock that is the outgrowth of these policy actions.

E. SPECIFICATION OF THE MODEL

The estimated model contains thirteen behavioral equations. Such simplicity was dictated mainly by a desire to focus on the general aspects of the issues considered here and to develop an analysis that is applicable specifically to the Jamaican economy. [Ref. 36] Any attempt to construct a more disaggregated model for the country would immediately run into the constraints of the limited availability of data. [Ref. 37]

Essentially, this model describes an economy that is:

1. small relative to the rest of the world;
2. open to international trade and financial flows;
3. maintains a pegged exchange rate--this does not mean that the exchange rate cannot be altered, but only that it is policy determined, and
4. characterized by a relatively underdeveloped financial sector. This specifically implies that the number of financial assets that could substitute for money holdings is very limited, and/or that the authorities control the interest rates of those assets that are available.

The stochastic equations of the model explain inflation, the overall balance of payments, the fiscal budget (i.e., government expenditure and revenues), output, money supply domestic credit, the current account, government and private sector consumption and investment.

1. Inflation

The specification for price changes is an extension of the monetary disequilibrium model of Goldman [Ref. 38] to

$$(1) \quad \text{INFC} = a_1 [\text{MIPL} - \text{MIP}^d] - a_2 [\text{CPIL} - \text{EXAE} \cdot \text{USCPI} - b_0] + a_3 [\text{GEXAE} \cdot \text{USCPI}] + C_1$$

Where:

INFC = the Jamaican rate of inflation (consumer price index.

EXAE = Jamaican exchange rate in units of Jamaican dollars per US dollar.

USCPI = United States consumer price index.

MIP = stock of real money balances (MI) deflated by the Jamaican consumer price index.

L = lagged one year.

GExAE = the rate of growth of EXAE.

The superscript d denotes demand.

On the simplifying assumption that the country's equilibrium exchange rate did not change secularly, b_0 may be used as a parameter rather than varying over time. If there is no excess demand for real money balances and domestic prices are equal to their equilibrium level b_0 , then with the exchange rate fixed, the rate of Jamaican inflation will be equal to the rate of inflation prevailing in the United States (the country's major trading partner). This result of course assumes that Jamaican policymakers always attempt to keep their country's prices in line with those charged in the United States.

Divergences from this equilibrium relationship can arise from two sources:

1. Any expansion of the money stock that results in an excess supply of real money balances will (in the next period) create inflationary pressures that tend to eliminate the disequilibrium in the money market.
2. If domestic prices are pushed away from the equilibrium level, for whatever reason, they will move in the direction that restores the relationship.

In a sense, the second term in equation (1) represents a type of "catch up" effect to any erosion that may occur in the country's international competitiveness.

Feeding into equation (1) is the stock demand for real money balances. Here we follow the standard literature [Ref. 39] in relating money demand to received income (GDPNP) and to the expected rate of inflation (INFCE).

$$(2) \quad MIP^d = b_1 + a_4 GDPNP - a_5 INFCE$$

This formulation which is typically used for developing countries [Ref. 40] differs from theoretical models in excluding the rates in interest on other financial assets from affecting money demand. This follows directly from the aforementioned assumption regarding the paucity of financial alternatives to money in Jamaica. The relevant substitution in the country is therefore between money and goods, or real assets with the opportunity cost being the expected rate of inflation.

Substituting equation (2) into equation (1) leads to the equation in its estimating form:

$$\begin{aligned}
 (3) \quad \text{INFC} &= (a_2 b_0 - a_1 b_1) + \\
 & a_1 [\text{MIPL} - a_4 \text{GDPNP} + a_5 \text{INFCE}] - \\
 & a_2 [\text{CPIL} - \text{EXAE} - \text{USCPIL}] + \\
 & a_3 [\text{GExAE} + \text{GUSCPI}] + C_1
 \end{aligned}$$

2. Balance of Payments

The overall balance of payments, as represented by the change in the stock of international reserves (in terms of domestic currency) is specified as a positive function of the excess demand for nominal money balances and a negative function of the deviation of the domestic price level from its purchasing power parity equilibrium.

$$\begin{aligned}
 (4) \quad \Delta R - \Delta \text{EXAE} &= a_6 \text{MI}^d - \text{MIL} - \\
 & a_7 \text{CPIL} - \text{EXAEL} \cdot \text{USCPIL} - b_0
 \end{aligned}$$

Where ΔR = the change in the net stock of international reserves.

MI = nominal stock of narrow money.

In equation (4) variations in the domestic currency value of foreign exchange reserves that are due solely to exchange rate movements are eliminated by subtracting the percentage change in the exchange rate from the left hand side of the equation. (This has to be done because such variation changes do not affect domestic money stock or the excess demand for money).

Equation (4) is a dynamic version of models in the tradition of the monetary approach to the balance of payments and, following that literature, it does not distinguish

between the current and capital accounts of the balance of payments. It makes no prediction as to whether domestic residents rid themselves of excess money balances by increasing expenditure (i.e. absorption) relative to output, or by purchasing financial assets abroad.

The second term, which says that the balance of payments will deteriorate when domestic prices rise relative to foreign prices, does not reflect current account factors alone, since such a decline in the country's competitive position may induce domestic asset holders to export capital on the expectation that the probability of a future devaluation of the (fixed) exchange rate has increased. [Ref. 41] Thus, the present treatment of the overall balance of payments in a single equation is consistent with our neglect of domestic financial markets.

Most empirical applications of the monetary approach to the balance of payments assume that the change in a country's international reserves is exactly equal to the difference between the flow demand for money and the flow supply of domestically created money. This standard assumption does not seem very realistic in the context of Jamaica, where the degree of international mobility of goods and assets may not be sufficient to allow an excess supply of money to be offset fully and instantaneously by balance of payments leakages.

The equation that is specified here for international reserves is consistent with the broad framework of the monetary approach, but it includes a degree of dynamic adjustment as measured by the parameter a_6 . Thus, it allows for inertia in the response of reserve flows to monetary disequilibrium in the short run, while still retaining the feature that the effect of an expansion in domestic credit on the money stock is completely offset in the long run.

Substituting for the nominal demand for money gives:

$$(5) \Delta R = a_6 [b_1 + a_4 \text{GDPNP} - a_5 \text{INFCE} + \text{CPI} - \text{MI}] - \\ a_7 [\text{CPIL} - \text{EXAEL} - \text{USCPIL} - b_0] + \\ \text{GExAE}$$

3. Government Sector

Fiscal policy and the government's budgetary position are modeled explicitly because of the crucial role that they play in the money supply process in Jamaica and in overall economic activity in the country. It is hypothesized that in most cases excess demand in the economy can be traced back to deficits of the public sector. Clearly, this assumption underlies the IMF's requirement in the late 1970s to reduce the fiscal deficit and limit credit from the Bank of Jamaica to the public sector. The causes of these effects and their impact on the economy are therefore important questions that need to be handled in any analysis where one must make recommendations about desirable changes in domestic credit policy.

The model of the government sector that we utilize assumes that nominal government expenditure adjust proportionally to the difference between the authorities' target spending and the actual level of expenditure in the previous period. [Ref. 42]

$$(6) \quad GE = a_8 [GE^* - GEL]$$

Where:

GE and GE* are the actual and derived levels of nominal government expenditures, respectively and a_8 is the coefficient of adjustment.

The derived level of government expenditure is simply related to the level of nominal income.

$$(7) \quad GE^* = b_2 + a_9 [GDPNP + CPI]$$

Until 1972 it was probably reasonable to assume that in the long run the government wished to increase its expenditure in line with the growth of nominal income, and therefore one would expect a priori that the income elasticity of a_9 would be equal or close to unity. Such a restriction would normally also be required to ensure that the overall model has a steady state solution when capacity income and foreign prices, or the exchange rate are allowed to change over time. This constraint is not imposed on the model during estimation, since there is no reason to suppose that it has held during the sample period, especially in light of the change in government priorities during the Manley administration (1972-1980).

Substituting equation (7) in equation (6) and solving for the level of government expenditure one obtains:

$$(8) \quad GE = a_8 b_2 + a_8 a_9 [GDPNP + CPI] + (1 - a_8) GEL$$

As with expenditure nominal government revenues (GR) are assumed to adjust to the difference between planned revenues (GR*) and actual revenues obtained in the previous period.

$$(9) \quad \Delta GR = a_{10} [GR^* - GRL]$$

Desired nominal revenues are assumed to be a function of nominal income.

$$(10) \quad GR^* = b_3 + a_{11} [GDPNP + CPI]$$

Substituting from this equation for GR* in equation (9) gives:

$$(11) \quad GR = a_{10} b_3 + a_{10} a_{11} [GDPNP + CPI] + (1 - a_{10}) GRL$$

4. Real Income

Reflecting the short term perspective of the stabilization programs, the model focuses on determining the deviations of actual output from its full capacity level, rather than on capacity output itself. Since capacity output is treated as exogenous to the model, such factors as capital accumulation, population growth and technical progress are not considered here. However, because this model distinguished clearly between capacity output and current output, it would not be difficult to extend it to allow for endogenous capacity growth if a more detailed analysis of the supply side

of the economy were desired, for example, in the context of the programs after 1980 designed for purposes of structural adjustment.

It is assumed that the rate of growth of output in Jamaica is positively related to: (1) the excess stock of real money balances, (2) the so-called output gap, represented here by the difference between normal capacity output and actual output of the period, and (3) the impact of the trend in real government expenditure on output.

$$(12) \quad \text{GDPNP} = a_{12} [M_2 P_L - M_1 P^d] + \\ a_{13} [\text{GDPNP}^* - \text{GDPNPL}] + \\ a_{14} [\text{GEHEX}] + C^2$$

Where:

GDPNP = real gross domestic product

$M_2 P$ = real stock of broad money (M_2)

GEHEX = the rate of growth in real government expenditure 1960-1980.

GDPNP is the normal level of output. This latter variable is simply proxied by the trend level of real income:

$$(13) \quad \text{GDPNP}^* = \text{YHT}$$

Where:

YHT = the linear trend in GDPNP

It follows that:

$$(14) \quad \text{YHTE} = \text{GDPNP}^* - \text{GDPNPL}$$

It is assumed that the sign on the trend in government expenditures is positive (along Keynesian lines). However,

it should be noted that the expansion in government expenditures which accompanied the deflationary monetary policies in the late 1970s did not generate adequate investment while the structure of revenue of expenditure and of the government debt which evolved created additional difficulties. The burden of maintaining economic activity was, largely, on government expenditure at a time when revenues were constrained.

Brown feels that the overall rate of expansion of government expenditures was "not in itself the main source of difficulty particularly since an expansionary fiscal program was necessary to insulate the domestic economy from the deflationary policies addressed to the balance of payments. Specific difficulties arose from the fact that the financing of this expenditure increasingly relied on central bank financing, on extending the scope of indirect taxes and on external short term loans." [Ref. 43]

This formulation assumes that any disequilibrium in the money market will result in a temporary expansion of real income, and/or conversely, any tightening of monetary policy that results in a fall in real money balances will have output consequences through hoarding effects on the level of real expenditure. The degree to which this occurs is measured by the parameter a_{12} . While there are no strong theoretical priors on the size of this parameter, conventional wisdom would probably tend to argue that it would be small. However, this is clearly an empirical question.

Substituting for M_2^d and GDPNP* in equation (12) yields:

$$(15) \quad \text{GDPNP} = a_{12} [-b_1 + M_2 \text{PL} - a_4 \text{GDPNP} + a_5 \text{INFCE}] + a_{13} [\text{YHTE}] + a_{14} [\text{GEHEX}] + C_2$$

Or in terms of the level of real income:

$$(16) \quad (1 + a_{12}a_4)\text{GDPNP} = a_{12} [-b_1 + \log M_2 \text{PL} + a_5 \text{IWFCE}] + a_{13} [\text{YHTE}] + a_{14} [\text{GEHEX}] + C_2$$

5. Expected Inflation

The expected rate of inflation follows the formulation of Harberger and is equal to the current rate of inflation minus that of the prior year, or:

$$(17) \quad \text{INFCE} = \text{INFC} - \text{INFCL}$$

While this formulation is arbitrary and does not fit easily into the currently popular rational expectations framework, [Ref. 44] it has the advantage of simplicity, given no other data series for Jamaica. [Ref. 45]

6. Domestic Credit and Money Supply

Generally speaking in an open economy such as Jamaica's the domestic component of the money stock--the level of domestic credit extended by the banking system--is taken to be the basic monetary tool. However, any model for a developing country must recognize the linkage that exists between government fiscal operations and the supply of money. For this reason, domestic credit is assumed to be determined

endogenously. More specifically, changes in domestic credit ΔDC can take place through changes in the banking system's claims on the government ΔGG and on the private sector ΔCP , that is:

$$(18) \quad \Delta DC = \Delta CG + \Delta CP, \text{ or}$$

$$(19) \quad \Delta DC = \Delta CG + \Delta CP + \Delta CL$$

If all changes in claims on the government are a reflection of the fiscal deficit of the government, then equation (19) can be written as:

$$(20) \quad DC + GE - GR + \Delta CP + DCL$$

In this formulation, any expansion of the fiscal deficit results in an equivalent increase in the stock of domestic credit. This simply assumes that the government finances its deficit by borrowing from the banking system, using its cash balances held with banks or by borrowing abroad and converting the proceeds into domestic currency. Only if the government were able to borrow domestically from the non-bank sector--say by selling bonds or bills would this identity break down. It is obvious that here the assumption of the lack of a sufficiently developed domestic market for securities, government or otherwise, becomes crucial. Despite Jamaica's recent progress in the development of these markets, the scope for such borrowing is fairly limited thereby confirming the appropriateness of the definition contained in equation (20).

The supply of money (M_2)--broadly defined to include current demand deposits and time savings deposits--is identically equal to the net stock of international reserves (in domestic currency terms) and the level of net domestic credit extended by the banking system:

$$(21) \quad M_2 = R + DC$$

For estimation purposes, the identities of domestic credit and the money supply were estimated using the following formulation:

$$(22) \quad DC = a_{15}GE - a_{16}GR + a_{17}\Delta CP + a_{18}DCL$$

and for the money supply

$$(23) \quad a_{19}MI = MIL + a_{20} [EXAE + R] - \\ a_{21} [EXAEL + RL] + a_{22}DC - a_{23}DCL = b_5$$

$$(24) \quad a_{24}M_2 = M_2L + a_{25} [EXAE + R] - \\ a_{26} [EXAEL + RL] + \\ a_{27}DC - a_{28}DCL + b_6$$

7. The Current Account

As noted earlier, the past decade proved to be a period of considerable stress for the Jamaican economy. Throughout most of the 1970s, a combination of events caused the international economic environment to become less conducive to stable growth for the country, and in particular made its balance of payments adjustment much more difficult. The substantial fluctuations in the world market prices of primary commodities, the sharp increases in the price of

energy products, the slowdown of economic activity in the industrial countries, and the rise in real interest rates toward the end of the period were all major contributors to the serious deterioration in the country's current account position (Table VII). At the same time, domestic developments in the country played a significant role in exacerbating payments disequilibrium. In particular, the government's inflationary demand-management policies--undoubtedly combined with a relatively rigid exchange rate and restrictions on trade and payments--resulted in domestic demand pressures and a cumulative loss in international competitiveness that also gave rise to current account difficulties.

With respect to the terms of trade, what Jamaica apparently lost from the inflation of oil and non-oil prices appears to have been gained back from higher bauxite, alumina and sugar so that the terms of trade generally did not turn against her over this period (Tables VIII, IX). Estimates [Ref. 46] are that between 1972 and 1976 the net contribution to the current account deficit of import and export price changes and of factors affecting export supply were as follows:

	<u>J\$ million</u>
Oil prices	+563
Non-oil prices	+687
Export prices	-442
Factors affecting	
export supply	+983
*in Jamaica	(+730)
*abroad	(+250)

TABLE VII
JAMAICA: MEASURES OF EXTERNAL BALANCE 1960-1981

(Millions of US Dollars)

Year	Trade Account TA	Service Accounts SA	Trade & Service Account CAA	Current Account CA	Current Official Transfers CAB	Changes in the Balance of Payments			
						Δ TA	Δ SA	Δ CAA	Δ CAB
1960	23.0	-20.4	2.6	-26.6	19.7	-35.9	9.2	-26.7	15.9
1961	-15.9	-11.2	-24.1	-10.7	-5.8	3.9	-7.0	-3.1	-0.8
1962	-9.0	-18.2	-27.2	-8.4	-6.7	18.5	-1.7	16.8	18.2
1963	9.5	-19.9	-10.4	9.8	12.3	-45.6	-5.9	-51.5	-53.2
1964	-36.1	-25.8	-61.9	-43.7	-40.9	-2.0	16.3	14.3	13.2
1965	-32.1	-9.5	-47.6	-30.5	-27.7	30.1	-39.0	-8.9	-10.6
1966	-6.0	-48.5	-56.5	-42.0	-38.3	-15.2	-4.4	-19.6	-39.2
1967	-23.2	-52.9	-76.1	-81.4	-77.5	-58.6	18.1	-40.5	-22.7
1968	-61.8	-34.8	-116.6	-91.9	-100.2	-8.1	-13.8	-21.9	-20.1
1969	-89.9	-48.6	-138.5	-123.6	-120.3	-17.7	-19.2	-36.9	-28.2
1970	-107.6	-67.8	-175.4	-152.9	-148.5	-24.3	5.9	-18.1	-18.3
1971	-131.9	-61.9	-193.8	-172.2	-166.8	-20.0	-11.7	-31.7	-23.2
1972	-151.9	-73.6	-225.5	-196.7	-190.0	-26.4	-23.1	-49.5	-50.3
1973	-175.3	-96.7	-275.0	-247.6	-240.3	119.1	39.1	158.2	157.4
1974	-59.2	-57.6	-116.8	-91.9	-82.9	-101.0	-91.9	-193.7	-204.9
1975	-161.0	-149.5	-310.5	-282.8	-287.8	25.8	-23.8	2.0	-18.7
1976	-135.2	-173.3	-308.5	-302.6	-306.5	205.3	40.0	246.3	259.4
1977	71.1	-133.3	-62.2	-42.1	-47.1	9.9	-23.5	-13.6	-13.5
1978	61.0	-155.8	-75.8	-50.0	-50.6	-145.3	2.1	-143.2	-88.4
1979	-64.3	-154.7	-219.0	-138.9	119.0	-11.2	-26.5	-37.7	-26.0
1980	-75.5	-181.2	-256.7	-166.0	175.0	-247.2	42.8	-204.4	-162.8
1981	-522.7	-138.4	-461.1	-356.8	-337.5				

Source: International Monetary Fund, International Financial Statistics, Yearbook 1983

TABLE VIII
JAMAICA: TERMS OF TRADE (in US\$)

	Net Barter Terms of Trade			Income Terms of Trade			
	Import Price Index	Export Price Index	Net Barter Terms of Trade	Export Value Indices	Import Value Indices	Income Terms of Trade	% Change
1969	43.2	60.0	138.9	43.7	43.2	101.2	-
1970	44.4	61.9	139.4	51.8	44.9	116.7	15.3
1971	52.9	60.1	113.6	49.8	52.9	94.1	-19.4
1972	52.2	62.2	119.2	52.9	52.2	101.3	7.7
1973	68.6	67.0	97.7	62.0	68.6	90.4	-10.8
1974	100.0	100.0	100.0	100.0	100.0	100.0	10.6
1975	115.8	151.1	130.5	118.3	115.8	102.2	2.2
1976	124.4	149.5	120.2	102.1	124.4	82.1	-19.7
1977	138.9	157.7	113.5	119.7	138.9	86.2	5.0
1978	139.7	163.4	117.0	128.5	139.7	92.0	6.7
1979	160.3	187.4	116.9	144.6	160.3	90.2	-2.0
1980	204.3	219.2	107.3	167.6	204.3	82.0	-9.1
1981	216.4	218.4	100.9				
1982							

Source: Bank of Jamaica, Balance of Payments of Jamaica, 1979, 1981.

TABLE IX

JAMAICA: CAPACITY TO IMPORT, IMPORT VOLUME AND INTERNATIONAL RESERVES

(1970=100)

	1972	1973	1974	1975	1976	1977	1978	1979	1980
Purchasing Power of Exports of Goods and Services	112.7	106.7	129.0	122.3	100.8	99.3	106.2	103.4	104.3
Purchasing Power of Net Imports of Capital (a)	72.9	80.3	74.4	98.6	38.8	(b)	(b)	10.1	21.5
Capacity to Import	106.1	102.4	120.0	115.9	90.7	79.7	84.1	88.1	90.7
Import Volume (c)	114.1	113.9	117.7	126.7	106.0	82.1	87.0	91.6	91.9
Gross International Reserves (d)	97.8	59.2	75.4	52.7	15.8	18.8	20.1	20.9	27.5
Gross International Reserves/Imports (e)	2.4	1.5	1.8	1.2	0.4	0.6	0.6	0.6	0.8
Current Account Deficit/Gross Domestic Product (f)	10.6	12.6	3.5	10.0	10.3	2.2	3.6	6.4	7.3

Source: United Nations, Economic Survey of Latin America, 1980, p. 564.

- Notes: (a) Defined here as the difference between the global balance and commercial balance plus the use made of IMF credit.
 (b) Less than zero
 (c) Goods and Services
 (d) Deflated by the price index of goods and services.
 (e) Months of imports of goods and services obtainable with the level of reserves and imports of each year.
 (f) At the prevailing rate of exchange.

Estimates have not been made of the effect of the volume of imports on current account deficits during the 1972-76 period, but Bonnick's [Ibid] calculations show that domestic factors affecting export supply contributed more to these deficits than did the direct costs of Jamaica's fuel bill.

"In other words, problems on the side of export production and sales appear to have played the key role in widening the trade deficit in 1975 and 1976, against the background of continuing import price inflation and a relatively once-and-for-all increase in oil import prices." [Ref. 47]

More specifically, among the domestic factors affecting the current account during this period were quantitative import restrictions, the exchange rate system, the bauxite levy and fiscal and monetary policy, all of which affected the relative prices of traded and local products as well as the level of aggregate demand and supply. [Ref. 48]

In the period from 1972 to 1976, the country's commercial policy moved from one of tariffs and convertibility to exchange controls. Imports had surged in 1972 with the liberal expansion of domestic credit and an accumulation of inventories in anticipation of these shifts to quantitative restrictions. Towards the end of 1972, import restrictions were imposed on a wide range of consumer goods and foreign exchange allowances for holiday travel were reduced. In early 1974, further import restrictions were introduced to cover all imports except those from CARICOM countries. Thereafter, the total value of imports, and of major

categories, were subject to ceilings which were adjusted occasionally depending on the projected payments position.

When the bauxite levy (paid in foreign exchange) was finalized in May 1974, some freeing of these restrictions was permitted, especially of raw materials and fuel which were to be licensed freely within reasonable limits. Between 1973 and 1976 the share of raw materials rose from 41 percent to 56 percent of total imports and the share of consumer and capital goods declined accordingly.

The 1975 import ceilings were promptly exceeded and the volume of imports rose 11 percent above their 1974 level, partly because of an expanded public works program. By early 1976, the country had run out of net foreign reserves and the licensing system was tightened in an effort to enforce very restrictive import targets.

Until 1971, the Jamaican dollar was freely convertible into foreign currency and pegged to sterling but after 1972 convertibility was restricted and exchange controls were tightened. In December 1971, Jamaica chose to continue to peg her currency to the pound sterling rather than to value with the US dollar, but in the second half of 1972 the new Manley government allowed the currency to "float" and in January 1973 the rate was pegged at US\$1.10 per Jamaican dollar. This rate was later maintained when the US dollar devalued in February 1973. In all, there was a moderate appreciation of the Jamaican dollar in 1971-72 and this

value depreciated by 16 percent relative to the US dollar between mid-1972 and early 1973.

With a rapidly widening payments deficit and declining net foreign reserves, the exchange rate was held unchanged until April 1977. This policy rate was maintained to avoid pressures on the cost of living, especially the domestic prices of imported food items and the exchange rate was not used to correct disequilibria in the balance of payments. With rising labor costs and a fixed exchange rate, the profitability of export production declined.

It has already been noted above that the government's expansive fiscal policy during this period also created severe balance of payments pressures. Based on the above considerations of the likely internal and external factors that have effected Jamaica's balance of payments, the following equation was specified [Ref. 49] for estimating the current account:

$$(25) \quad \Delta CA = a_{29}TOT + a_{30}GYIC - a_{31}RRI - a_{32}RER - a_{33}GEHTE$$

Where:

ΔCA = changes in the current account balance

(Other measures of the balances of payments included

ΔTA = changes in the trade account;

ΔCAA = changes in the trade plus service accounts;

$\Delta CAB = \Delta CAA$ + changes in private transfers-excluding official transfers.)

GYIC = growth of real GNP in the industrial countries.

RRI = real foreign interest rate.

RER = real effective exchange rate

GEHTE = deviations from the linear trend of
real government expenditures.

Equation (24) can be viewed as an unrestricted reduced form relationship that is derived from a structural model of the components of the current account--imports, exports and net service payments. The chief advantage of this formulation is that it allows separate identification of the relative importance of external factors--TOT, GYIC and RRI from domestic factors RER and GEHTE.

8. Private Investment

Private investment (Tables X, XI) is assumed to be positively affected by: (1) an accelerator mechanism (depicted by the change in real GDP ($\Delta GDPNP$)), (2) the activity of the public sector (both directly through "crowding out" and indirectly through effecting the investment climate), and (3) inflationary expectations.

Clearly private investment is affected by inflows of capital. Foreign private capital inflows have always played a key role in the balance of payments and capital formation in Jamaica. [Ref. 50] In the late 1960s and early 1970s, during a major expansion of the bauxite sector, net foreign capital inflows made up 20-25 percent of all foreign exchange receipts and contributed up to 30 percent of domestic capital formation.

After the completion of these major investments in 1971, foreign direct investment declined and by 1975 there

TABLE X

JAMAICA: TRENDS IN INVESTMENT, 1969-1976

(Millions of Jamaican Dollars)	1969	1970	1971	1972	1973	1974	1975	1976
Gross Fixed Capital Formation	315.3	367.1	356.0	366.8	448.2	478.2	609.6	450.8
Gross Accumulation	348.9	369.2	411.5	393.4	541.8	525.2	670.1	494.4
Increase in Stocks	33.6	2.1	55.5	26.6	93.6	47.0	60.5	43.6
Government Investment	12.4	15.8	18.2	23.4	26.1	36.5	58.1	69.1
Private Investment	302.9	351.3	337.8	343.4	422.1	441.1	551.5	381.7
(% of Gross Domestic Product)								
Gross Fixed Capital Formation	31.8	31.4	27.8	25.5	25.8	22.0	23.4	16.6
Gross Accumulation	35.2	31.6	32.2	27.3	31.2	24.2	25.7	18.2
Increase in Stocks	3.4	0.2	4.3	1.9	5.4	2.2	2.3	1.6
Government Investment	1.3	1.4	1.4	1.6	1.5	1.7	2.2	2.5
Private Investment	30.5	30.2	26.4	23.9	24.3	20.4	21.1	14.1

Source: Department of Statistics, National Income and Product, various issues.

TABLE XI
JAMAICA: TRENDS IN INVESTMENT, 1977-1982

(Millions of Jamaican Dollars)	1977	1978	1979	1980	1981	1982
Gross Fixed Capital Formation	349.5	498.9	748.2	690.1	954.3	1153.6
Gross Accumulation	365.1	568.7	813.6	737.2	1,114.1	1,155.8
Increase in Stocks	15.6	69.8	65.4	47.1	159.8	2.2
Government Investment	114.9	187.3	249.7	349.2	430.8	601.5
Private Investment	234.6	311.6	228.4	340.9	523.5	552.1
(% of Gross Domestic Product)						
Gross Fixed Capital Formation	11.8	13.4	17.5	14.6	18.2	20.3
Gross Accumulation	12.4	15.2	19.1	15.6	21.3	20.4
Increase in Stocks	0.5	1.9	1.5	1.0	3.1	0.1
Government Investment	3.9	5.0	5.9	7.4	8.2	10.6
Private Investment	8.0	8.4	5.4	7.2	10.0	9.7

Source: Department of Statistics, National Income and Product, various issues.

was a net capital outflow. One of the major reasons for the worsening balance of payments in 1975 and 1976 was the precipitous drop in long term private net capital inflows from J\$139 million in 1974 to J\$30.5 million in 1976. This reduction in private capital inflows was only partly offset by the growth of official foreign borrowing on the Eurodollar markets between 1973 and 1976.

It has been argued [Ref. 51] that the decline in foreign financing in Jamaica after 1975 was mainly the result of domestic rather than external factors, in so far as the internal incentives offered to foreign investors were not sufficiently attractive from 1974 onwards and the social and political climate was a major disincentive to foreign capital.

In addition to affecting foreign capital flows, the public sector in Jamaica has had a strong impact on saving investment decisions, both directly through the choice of public investment projects and indirectly through the impact of its taxing, spending and domestic credit policies on decisions taken by the private sector. It has shown [Ref. 52] that unless the supply of foreign savings to the domestic economy is perfectly elastic, private sector capital formation and the growth of private sector potential output will be retarded by ceilings that hold real interest rates below their equilibrium levels, by taxes on savings or increased public sector deficits. However, the effect of such policies on the growth of total potential output (including both the

private and public sectors) depends critically on what the authorities do with the funds that these policies put at their disposal. Many types of government policies may be easily justifiable in global terms, even if they tend to compress private sector fixed capital formation. For example, it may be argued that taxing or running deficits to finance public sector infrastructural investment, education and manpower training, etc. will yeild external economies that increase the return on private investment and thus the rate of growth of total potential output. Even here of course, taxing or deficit spending policies impose the usual dead-weight loss on the static efficiency of the saving-investment process.

Here the net impact of the government budget seems to have been negative in that the government's deficit also contributed to crowding out of private investment. The deficit (in real terms) increased from J\$41 million (4 percent of GNP) in 1970 to J\$187 million (17 percent of GNP) in 1976. Nominal central bank credit to the central government increased from J\$4 million in 1971 to J\$402 million in 1977. Commercial banks lending to the government increased rapidly as well, from J\$44 million (11 percent of bank assets) in 1970 to J\$248 million (33 percent of bank assets) in 1977.

"Apart from causing inflation, this massive expansion of government debt displaced private sector debt, including that of productive enterprises. Government debt as a percentage of total debt rose from 11 percent in 1970 to 50 percent in 1977. Furthermore, the average ratio of taxes to GNP increased from 0.17 in 1970 to 0.28 in 1977. Through its credit and fiscal operations the Jamaican government succeeded in bidding away real resources on an increasing scale." [Ref. 53]

The share of government in total consumption expenditures rose from 17 percent in 1970 to 24 percent in 1977. No data is available on its share in total imports. However, the exemption of government transactions from the stringent import restrictions implies that government's share became larger. "In effect the government facilitated its own requirements by crowding out the import demands of the private sector." [Ibid]

Unfortunately, during this period public sector expenditures appear to have on the balance negatively affected private investment. There were two main difficulties. One was the lack of an appropriate functional distinction between public ownership as an objective of democratic socialist purpose and public ownership as a means of redistribution.

"While the political directorate clearly understood the need to complement the new perception of the political framework by altering the economic power structure, the means to change were missing. As the decision-making process did not cohere, and as this was reinforced by political fragmentation, the practice of democratic socialism was more and more conducted within short run constraints oriented to short run objectives. Unfortunately, the need to emphasize appropriate investment policies was paramount, not only because of the attempt to change the political and economic direction. A focus on investment was particularly necessary at that time because this was the only means through which short run deflationary policies, such as were then in existence to protect the balance of payments can be made to complement or at least not retard long run growth prospects." [Ref. 54]

The second negative factor associated with government expenditures was that these expenditures did not extend productive capacity nor did they induce private sector activity.

Further, given the economic conditions of the period, the government budget in spite of continuous increases was simply not adequate for the traditional task of filling the gap left by private economic activity. The point is of some relevance for an appraisal of the period after 1976, when business economic activity declined even further. "Given the basic structural characteristics of the economy, the traditional budget structure whatever the increases, could not generate growth dynamic." [Ibid]

The impacts of government action on private investment are difficult to quantify. There was no significant relationship found between government investment and private investment. Consequently, the level of government consumption (GCNP) was assumed to serve as a proxy for the total impact of government activity in private sector investment. Inflationary expectations for inventory and other anticipatory speculative gains were assumed to be proxied by the change in world market prices from the previous year to that of the prior period [Ref. 55] (CPIWL).

In summary, private investment was specified as:

$$(26) \quad IPP = a_{34} \Delta GDPNP - a_{35} GCNP + a_{36} \Delta CPIWL$$

9. Private Consumption

Income redistribution and short term employment objectives rather than production objectives appear to have dominated government expenditure and saving (Tables XII, XIII) programs. Thus, basically nonproductive programs, such as

TABLE XII
JAMAICA: PATTERNS OF SAVING, 1969-1976

(Millions of Jamaican Dollars)	1969	1970	1971	1972	1973	1974	1975	1976
Government Saving	55.8	50.6	64.2	42.8	17.4	123.0	69.5	-24.2
Private Saving	190.2	241.0	79.1	233.7	362.9	262.6	370.3	212.7
Depreciation	(93.0)	(117.0)	(122.2)	(144.0)	(172.7)	(204.9)	(230.6)	(248.3)
Other	(97.2)	(124.0)	(-43.1)	(89.8)	(190.7)	(57.7)	(139.7)	(-35.6)
Gross Domestic Savings	246.0	291.6	143.3	276.5	380.3	385.6	439.8	188.5
Net Saving	153.0	174.6	145.6	132.5	207.6	180.7	209.2	-59.8
Net Borrowing from Rest of World	106.1	85.1	148.2	122.3	168.2	174.8	225.6	302.2
Net Capital Transfers from Rest of World	-3.2	-4.7	-4.5	-5.4	-6.7	-8.2	4.7	3.7
<hr/>								
% of Gross Domestic Product)								
Government Saving	5.6	4.3	5.0	3.0	1.0	5.7	2.7	-0.9
Private Saving (total)	19.2	20.6	6.2	16.2	21.1	12.2	14.3	7.9
Private Saving (other)	9.8	10.6	-3.4	6.2	11.1	2.7	5.4	-1.3
Gross Domestic Savings	24.8	24.9	11.2	19.2	22.1	17.9	17.0	7.0
Net Saving	15.4	14.9	11.4	9.2	12.1	8.4	8.1	2.2
Net Borrowing from Rest of World	10.7	7.3	11.6	8.5	9.8	8.1	8.7	11.2

Source: Department of Statistics, National Income and Product, various issues.

TABLE XIII
JAMAICA: PATTERNS OF SAVING, 1977-1982

(Millions of Jamaican Dollars)

	1977	1978	1979	1980	1981	1982
Government Saving	-91.9	-163.6	-63.2	-127.3	-195.1	-449.8
Private Saving	332.9	654.0	675.4	593.0	589.6	859.2
Depreciation	(284.2)	(342.7)	(393.7)	(422.8)	(427.6)	(537.3)
Other	(48.7)	(311.3)	(287.1)	(170.2)	(162.0)	(321.9)
Gross Domestic Savings	241.0	490.4	612.2	465.7	394.5	409.4
Net Savings	-43.2	147.7	218.5	42.5	-33.1	-127.9
Net Borrowing from Rest of World	118.2	62.3	183.7	255.8	701.8	724.1
Net Capital Transfers from Rest of World	5.9	16.0	17.7	16.0	17.8	22.3

(% of Gross Domestic Product)

Government Savings	-3.1	-4.4	-1.5	-2.7	-3.7	-7.9
Private Saving (total)	11.3	17.5	15.8	12.5	11.3	15.2
Private Saving (other)	1.7	8.3	6.7	3.6	3.1	5.7
Gross Domestic Savings	8.2	13.4	14.3	9.8	7.5	7.2
Net Savings	-1.5	4.0	5.1	0.9	-0.6	2.3
Net Borrowing from Rest of World	4.0	1.7	4.3	5.4	13.4	12.8
Net Capital Transfers from Rest of World	0.2	0.4	0.4	0.3	0.3	0.4

Source: Department of Statistics, National Income and Product, various issues.

the Special Employment Program introduced in 1972 as a temporary form of unemployment relief, grew throughout the 1970s. "The trends in government consumption and the social welfare nature of many of the public programs indicate that the main effect of governmental growth was the substitution of public consumption and less productive public expenditures for more productive private expenditures. Bureaucratic growth through its resource allocative effect, further determined the productive capacity and performance of the economy." [Ref. 56]

In addition to the usual levels of real incomes (GDPNP), real private consumption (PCNP) is therefore specified as positively related to government consumption (GCNP) and negatively related to declines in wealth caused by domestic inflation CPI; or

$$(27) \quad PCNP = a_{37}GDPNP + a_{38}GCNP - a_{39}\Delta CPI$$

10. Government Consumption and Investment

For purposes of model simulation real government expenditures (GEHEX) are taken as exogenous. Since the composition of public expenditures appears to be important in affecting both private consumption and investment, government expenditures are disaggregated and simply related to the trend in real government expenditures:

$$(28) \quad GCNP = a_{40}GEHEX$$

Where:

GCNP = Government consumption

$$(29) \quad \text{IGP} = a_{41} \text{GEHEX}$$

Where:

IGP = Government investment

F. ESTIMATION RESULTS

The model described in the previous sections was estimated using two stage least squares estimation technique. [Ref. 57] Several dummy variables were included to take into account structural shifts cause by the oil price increases in the early 1970s, and for changes in political regimes during this period. For the oil price changes, DUMO = 0, 1953-1973; 1, 1974-1982. A delayed reaction to the oil price increases is given by DUMOA = 0, 1953-1974; 1, 1975-1982. (Dummies with the 1978-79 oil price increases were tried, but were not significant.) For political change, DUMP = 0, 1953-1963 (year of pre-independence); 1, 1962-1972 (JLP administration; 2, 1973-1980 (Manley PNP administration); and 3, 1981-1982 (Seaga, JLP administration).

As theoretically expected the results [Ref. 58] (Table XIV) indicate that an excess supply of real money balances results in an increase in the rate of inflation. The monetary theory to the balance of payments appears to explain quite well changes in reserves (ΔR).

Not surprising is the strong negative impact of the trend in real government expenditures (GEHEX) on real income (DPNP). On the other hand, major determinants of real income are: (1) the difference between capacity, real income and the actual level, and (2) monetary disequilibrium.

TABLE XIV

JAMAICA: MACROECONOMIC MODEL

(Two stage least squares estimation)

Inflation (INFC)

$$\text{INFC} = 0.031 \text{ M1PL} - 0.0023 \text{ GDPNP} + 1.69 \text{ GUSCPI} + 0.14 \text{ GEYAE} \\ (3.06) \quad (-2.25) \quad (4.97) \quad (2.93)$$

Balance of Payments (R)

$$\Delta R = 0.007 \text{ GDPHP} - 0.79 \text{ MIL} + 85087 \text{ CPI} - 352.53 \text{ CPIL} + 0.91 \text{ GEYAE} - 49.93 \\ (2.06) \quad (-2.39) \quad (2.79) \quad (-1.78) \quad (2.10) \quad (-1.32)$$

SE = 28.77 DW = 2.67

Government Expenditures (GE)

$$\text{GE} = 0.030 \text{ GDPHP} + 1394.1 \text{ CPI} + 0.48 \text{ GEL} + 110.49 \text{ DUMOA} - 272.9 \\ (4.23) \quad (4.84) \quad (2.98) \quad (2.21) \quad -5.10$$

SE = 32.99 DW = 2.41

Government Revenues (GR)

$$\text{GR} = 0.025 \text{ GDPHP} + 1228.24 \text{ CPI} + 0.28 \text{ GRL} - 212.18 \\ (3.04) \quad (6.83) \quad (2.03) \quad (-4.24)$$

SE = 30.58 DW = 2.23

Real Gross Domestic Product (GDPHP)

$$\text{GDPHP} = 0.60 \text{ MZPL} + 2.31 \text{ GDPHPPL} - 2.78 \text{ GENEX} + 1.71 \text{ YHTE} - 3997.75 \\ (2.54) \quad (4.02) \quad (-4.43) \quad (3.20) \quad -2.27$$

SE = 172.74 DW = 2.00

Narrow Money (M1)

$$\text{M1} = 1.37 \text{ MIL} - 75.92 \text{ EXAE} - 81.79 \text{ EXAEL} + 0.54 \text{ R} - 13.39 \text{ PL} + 104.53 \\ (20.21) \quad (-2.06) \quad (-2.69) \quad (2.17) \quad (-2.77) \quad (3.86)$$

SE = 18.21 DW = 2.92

Broad Money (M2)

$$\text{M2} = 0.80 \text{ MZL} - 59.53 \text{ EXAF} - 13.68 \text{ XAEL} + 0.69 \text{ R} - 0.24 \text{ DC} + 117.35 \\ (14.46) \quad (-1.91) \quad (-3.67) \quad (5.19) \quad (8.16) \quad (4.00)$$

SE = 17.61 DW = 2.0

TABLE XIV(cont inued)
JAMAICA: MACROECONOMIC MODEL

(Two stage least squares estimation)			
Domestic Credit (DC)			
$DC = 0.60 DCL + 0.51 \Delta DCP + 0.72 GE - 125.84 DUM0 - 45.22$			
	(4.33)	(9.94)	(4.06) (-2.50) (-5.50)
Current Account Balance of Payment (CA)			
$\Delta CA = 0.79 GEHE + 25.80 GYICL - 230.28 DOMOA + 86.23$			
	(-3.17)	(2.76)	(-2.11) (0.78)
Private Investment (IPP)			
$IPP = 0.37 \Delta GDPHP - 1.85 GCHPL + 1731.4 \Delta CPIWL + 2217.21$			
	(2.73)	(-7.92)	(3.44) (12.82)
Private Consumption (PCHP)			
$PCHP = 0.42 GDPHP + 0.80 GCHP - 2860.84 CPI + 852.88$			
	(10.10)	(4.36)	(-4.53) (7.80)
Government Consumption (GCHP)			
$GCHP = 0.56 GEHEX - 219.02$			
	(3.31)	0.67	
Government Investment (IGP)			
$GP = 0.24 GEHEX - 219.02$			
	(10.07)	(-5.51)	

SE = 76.44 DW = 2.74

SE = 127.70 DW = 1.75

SE = 124.56 DW = 1.69

SE = 191.59 DW = 0.46

SE = 27.35 DW = 0.84

The current account balance appears to be affected by both internal (GEHTE) factors and external developments (GYICL) and (DUMOA). Interestingly, there was a shift over time in the relative importance of internal and external factors with the lagged rate of growth in GNP in the industrial countries (GYICL) being the only significant variable for the 1960-81 period (Table XV). For the sub-period 1969-1981 (Table XVI) government expenditures and the oil price increases also contributed to the deterioration in the current account (but probably not the rise in real foreign interest rates--RRI). As anticipated, government consumption had a negative impact on private investment, but contributed to increases in real personal consumption expenditures during this period.

G. POLICY IMPLICATIONS OF THE MODEL

The estimated model of the previous sections is now used to illustrate some policy issues that arise in connection with the implementation of stabilization programs in Jamaica during the late 1970s. For this purpose, it is assumed that the estimated model can be taken to reflect the dynamic behavior of the country. The intent is to investigate the optimal path that might be followed by major economic aggregates, given alternative values for key exogenous variables. Here the optimal path is determined by the method of optimal control.

TABLE XV
JAMAICA: DETERMINANTS OF THE CURRENT ACCOUNT BALANCE, 1960-1981

Measure of External Balance	Independent Variables				Statistics		
	GEHE	GYCL	RRI	DUMOA	r ²	DW	F
ΔIA	-0.18 (-1.73)	26.27 (2.73)			0.243	1.45	4.38
	-0.21 (-2.08)	30.13 (3.13)			0.380	2.00	5.84
	-0.20 (-1.82)	31.23 (3.04)			0.357	1.87	5.27
ΔCAB	-2.00 (-1.97)	31.35 (3.25)			0.389	2.08	6.05
ΔIA		22.10 (2.19)	-59.85 (-0.18)		0.205	1.47	2.45
		25.4 (2.43)	-58.55 (-0.17)		0.241	3.00	1.90
ΔCAA		26.64 (2.46)	-56.04 (-0.16)		0.245	1.82	3.09
		26.77 (2.61)	-16.79 (-0.05)		0.264	1.95	3.42
ΔIA	-0.21 (-1.61)	22.90 (1.77)		23.24 (-0.40)	0.322	1.44	2.84
ΔCA	-0.22 (-1.65)	29.55 (2.27)		-4.02 (-0.07)	0.381	1.99	3.69
	-0.22 (-1.63)	27.95 (2.02)		-22.62 (-0.36)	0.362	3.40	1.84
ΔCAB	-0.19 (-1.48)	32.08 (2.46)		5.03 (0.08)	0.389	3.82	2.09

TABLE XV (continued)
JAMAICA: DETERMINANTS OF THE CURRENT ACCOUNT BALANCE, 1960-1981

Measure of External Balance	GEHTE	Independent Variables			Statistics			
		GYICL	RRI	DUMOA	r ²	DW	F	
Δ TA		27.95 (2.08)	-60.38 (-0.18)	33.23 (0.67)	0.225	1.47	1.74	
Δ CA		34.77 (2.57)	-59.40 (-0.18)	54.32 (1.09)	0.287	1.99	2.42	
Δ CAA		33.44 (2.33)	-56.65 (-0.16)	38.59 (0.73)	0.267	2.19	1.86	
Δ CAB		36.79 (2.76)	-17.68 (-0.05)	56.93 (1.16)	0.316	2.07	2.77	
Δ TA	-0.31 (-1.91)	21.01 (1.61)	413.24 (-0.81)	-52.19 (-0.81)	0.362	1.53	2.41	
Δ CA	-0.33 (-1.97)	27.57 (2.11)	431.86 (1.08)	-34.27 (-0.53)	0.44	3.09	2.17	
Δ CAB	-0.34 (-1.96)	25.82 (1.86)	462.32 (1.09)	-55.01 (-0.81)	0.403	1.97	2.86	
Δ CAB	-0.31 (-1.85)	30.06 (2.30)	441.62 (1.11)	-25.91 (-0.40)	0.430	2.27	3.21	

Note: See table for definition of variables

TABLE XVI

JAMAICA: DETERMINANTS OF THE CURRENT ACCOUNT BALANCE, 1960-1981, II

Measure of External Balance	Independent Variables				Statistics		
	GEITE	GVICL	RR1	DUMOA	r ²	DW	F
(1) Δ TA	-0.26 (-1.71)	35.27 (2.37)			0.389	1.41	3.19
(2) Δ CA	-0.32 (-2.30)	45.47 (3.29)			0.547	2.11	6.04
(3) Δ CAA	-0.31 (-1.91)	44.07 (2.80)			0.464	1.91	4.33
(4) Δ CAB	-0.31 (-2.21)	46.00 (3.29)			0.543	2.21	5.94
(5) Δ TA		42.42 (2.37)	-1305.34 (-1.54)		0.361	1.44	2.82
(6) Δ CA		54.83	-1692.30 (-2.19)		0.532	2.00	5.68
(7) Δ CAA		51.49 (2.73)	-1488.04 (-1.66)		0.426	1.87	3.72
(8) Δ CAB		54.60 (3.28)	-1605.31 (-2.03)		0.519	2.09	5.40
(9) Δ TA	-0.82 (-3.64)	15.97 (1.20)		-270.71 (-2.89)	0.683	1.87	6.46
(10) Δ CA	-0.79 (-3.57)	28.88 (2.21)		-227.40 (-2.46)	0.730	2.60	8.09
(11) Δ CAA	-0.90 (-3.95)	22.87 (1.69)		-290.63 (-3.05)	0.736	2.47	8.38
(12) Δ CAB	-0.78 (-3.50)	29.31 (-2.45)		-228.83 (2.44)	0.729	2.66	7.93

TABLE XVI (continued)

JAMAICA: DETERMINANTS OF THE CURRENT ACCOUNT BALANCE, 1960-1981, II

Measure of External Balance	GEHTE	Independent Variables			Statistics		
		GYICL	RRI	DUMOA	r ²	DW	F
(13) Δ TA		39.45 (2.40)	-3157.51 (-2.40)	-177.36 (1.74)	0.521	1.67	3.26
(14) Δ CA		52.30 (3.42)	-3272.19 (-2.67)	151.29 (-1.59)	0.634	2.03	5.21
(15) Δ CAA		48.44 (2.77)	-3385.48 (-2.41)	-181.69 (-1.67)	0.562	1.96	3.85
(16) Δ CAB		52.15 (3.30)	-3128.42 (-2.46)	-145.84 (1.48)	0.728	1.70	5.34
(17) Δ TA		23.46 (1.60)	-1447.21 (-1.14)	-302.13 (-3.41)	0.728	1.70	5.34
(18) Δ CA		37.74 (2.72)	-1717.77 (-1.43)	-264.69 (-2.36)	0.785	2.29	7.31
(19) Δ CAA		30.39 (2.03)	-1458.33 (-1.13)	-322.29 (-3.29)	0.659	2.21	6.81
(20) Δ CAB		37.22 (2.57)	-1534.41 (-1.23)	-262.14 (-2.76)	0.769	2.35	6.67

Notes: GEHTE = Trend in real government expenditures minus lagged value in real government expenditures.

GYICL = Growth in real gross domestic product in industrial countries lagged one year.

RRI = Three month Eurodollar deposit rate adjusted by Jamaican export price index.

DUMOA = Dummy variable reflecting lagged response to 1973-74 oil price rise; 0, 1960-1974; 1, 1975-81.

TA = Change in Jamaican trade account.

CA = Change in Jamaican current account.

CAA = Change in Jamaican trade and service account.

CAB = Change in CAA + private transfers.

Data from International Monetary Fund, International Financial Statistics, Yearbook, 1973.

The literature [Ref. 59] on optimal control is highly technical, yet the control itself is straightforward. The essential idea of optimal control is precisely to derive the optimal policy in order to steer the economy to the specified targets. A necessary step in applying control theory is to specify an objective function or a welfare loss function by which the outcome associated with the optimal policy or its alternatives can be evaluated. Given the welfare loss function and a dynamic model, a policy sequence can be found minimizing the expectation of the welfare loss for a given time horizon. In the present case where the welfare loss function is quadratic and the dynamic system is linear, the solution takes the forms of a linear feedback control equation. That is to say, the optimal policy is a linear function of lagged endogenous variables on the exogenous factors including the target value of the target variables.

Once the objective function is determined the programming model together with the objective functions can be used to derive the optimal policy. [Ref. 60] The optimal policy so derived does not require any further consistency check as required in the conventional programming exercises which usually do not make use of well-defined objective function and a simultaneous equation model.

While it is recognized that there are many particularly political elements which are not included in the calculations but which are nevertheless imperative in making a policy

decision, policies derived within the framework of optimal control have the merit of logical consistency and compatibility.

The welfare loss function is specified in quadratic form as:

$$W = \frac{1}{2} \sum_{t=1}^n (Y_t - Y_t^x)' K_t (Y_t - Y_t^*)$$

where Y_t^x indicates the target values of Y_t ; K_y is a diagonal matrix of rank q with q indicating the number of targets and n is the specified time horizon. The elements in the K matrix indicate the weights of penalty which are attached to the squared deviations between the actual values and the target values of the target variables. The deterministic optimal control problem for Mexico is therefore to find X_y which minimized the welfare loss functions given the macro-economic relationships depicting the country's main economic linkages.

It should be noted that in the exercises described below, there was equality between the number of targets and the number of control variables so that the optimal policy solution was unique, not depending on K matrix (given the targets selected were compatible for the given set of control variables and that the control variables were independently and indefinitely variable).

Two unresolved issues concern how the success of the proposed stabilization program as a whole is to be measured and the appropriate mix of demand and supply policies. The overall criterion for evaluating a stabilization program is

much less straightforward than it may at first appear. Even if a single valued index were available for judging the success of the stabilization programs in Jamaica, the issue of the appropriate criterion would still arise; namely, does "success" mean that the change in the index is positive, zero, or a smaller negative number than it was before the implementation of the program?

In practice, of course, no generally accepted "stabilization index" exists. But there are also problems in the methods of evaluation. One approach might be to review the outcome of the stabilization programs initiated during this time. Basically, the main problem with this approach is that it is essentially subjective. Since there is no explicit method of ascertaining what would have happened to the economy in the absence of the IMF stabilization programs, there is no certain way of distinguishing between changes that were the result of the program and those that would have occurred in any case.

An alternative approach would be to perform controlled experiments in which the effects of various policy instruments are analyzed in the context of the macro-economic model developed above. This approach has the advantage that it is easier to determine the relative effectiveness of alternative combinations of policy instruments in influencing particular targets. In this section, we have opted for the second approach. Specifically, we make use of the structural model

developed above to analyse the effectiveness of various types of policies in the Jamaican context.

In examining the model, it is clear that a package of stabilization measures can obviously reduce excess demand in the economy either by a policy of squeezing domestic demand or augmenting domestic supply. Prudence and common sense suggest that the best stabilization strategy for Jamaica during this time would have been one that made use of an integrated package that sought to maximize the benefits or minimize the costs of adjustment. This section uses simple simulation experiments to provide a preliminary analysis of the effects of various adjustment measures.

Specifically, we consider the effects of restraint on real government expenditures, exchange rate devaluation and an unspecified supply side policy that succeeds in raising the level of productive capacity.

For the purposes of the optimal control analysis of the IMF stabilization period in Jamaica, the model's exogenous variables were set at their actual historical values. In the first set of runs, real government expenditures were used as the design variable intended to control aggregate demand during the period 1977-1980.

In run I (Table XVII) real government expenditures were held at their 1976 level, with historical movements in the exchange rate incorporated into the calculations. The level of credit to the private sector was also assigned its actual

TABLE VII
JAMAICA: OPTIMAL CONTROL MODEL - OPTIMAL STABILIZATION PROGRAMS, 1977-80

Macroeconomic Indicator	Actual Values		Optimal Control Run Values for 1980			
	1976	1980	I	II	III	IA
Gross Domestic Product (GDP)	5693.1	4760.4	6134.2	6471.9	6761.2	6344.8
Private Consumption (PCNP)	4676.6	3109.2	3706.5	3819.9	3948.8	3648.4
Private Investment (IPP)	940.8	304.9	1020.7	113.06	1182.0	1078.2
Total Reserves (R)	29.5	187.0	160.4	137.9	128.7	-119.4
Real Government Expenditure (GEHEX)	1786.2	2351.9	1786.2	1715.9	1681.2	1786.2
Consumer Price Index CPI	0.406	1.000	0.837	0.829	0.815	0.837
Change in Current Account (CA)	-19.8	-27.1	3.8	18.3	16.1	14.9
Average Annual Change 1976-1980						
Gross Domestic Product		-8.2	-2.2	-0.8	0.3	-1.3
Private Consumption		-9.7	-5.6	-4.9	-4.1	-6.0
Private Investment		-22.4	2.1	4.3	5.9	-3.5
Total Reserves		58.8	52.7	47.0	44.5	-49.9
Real Government Expenditure		7.1	0.0	-1.0	-1.5	0.0
Consumer Price Index		25.3	19.8	19.5	19.0	19.8

NOTES: See text for assumptions made in each optimal control run.
The 1980 values for the change in current account are the average changes over the 1976-80 period.

values for the 77-80 period. In contrast to the actual developments during the period, the results are striking:

1. Real income declines by only 2.2 percent per annum, compared with the actual decline of 8.2 percent per annum.
2. Private consumption declines by 5.6 percent per annum, as contrasted with an actual decline of 9.7 percent per annum.
3. Perhaps most importantly, private investment stabilizes and actually increases by 2.1 percent per annum, compared with the historical 1976-80 decline of 22.4 percent per annum.
4. Total foreign reserves increase nearly as well as under the IMF programs, reaching 160.4 compared with the actual level of 187.0 for 1980.
5. There is also a decline in inflation to 19.8 percent average increase in the consumer price index, compared with the historical increase of 25.3.
6. Finally, the current account averages a positive gain over this period of 3.8 million U.S. dollars, compared with the average historical decline of 27.1 million U.S. dollars.

To determine the level of reduction in government expenditures necessary to stabilize real income at its 1976 level, runs II and III were performed. In run II, real government expenditures declined by one percent per annum during this period while in run III the decline was set at 1.5 percent. The results indicate that a decline in real government expenditures somewhere between one and one and a half percent would have been consistent with a stable level of real gross domestic product.

While it might be argued that a more equitable goal would have been to stabilize or increase real consumption expenditures,

the model indicates that growth (measured by real gross domestic product) and equity (as measured by real personal consumption expenditures) were not in conflict. In fact, maximizing real personal consumption expenditures in 1980 instead of real gross national product yielded the same growth in government expenditures. Interestingly enough, while the personal consumption equation has a positive sign for real government expenditures, it turns out that personal consumption is more strongly influenced by increases in real gross domestic product and the negative impact of inflation than it is by government consumption. If in fact government consumption expenditures were undertaken for equity purposes during this period, the evidence in runs I through II indicates that these programs actually had perverse results.

In the context of demand management through controlling government expenditures, exchange rate policy was also examined. Run IA simulates the economy under conditions in run I, but with no devaluation (the 1976 exchange rate held throughout the 1976-1980 period), while run IB assumes a once-and-for-all dramatic devaluation of 100 percent in 1977. The main results of exchange rate oriented policies indicate that:

1. No devaluation appears beneficial to real income growth and private investment, but results in a serious loss in foreign exchange reserves.
2. The one hundred percent devaluation, while contributing significantly to the country's reserve position, appears to significantly impair the growth in real income.

In general, the simulations indicate the purely demand related stabilization program (incorporating exchange rate adjustments) placed a high cost on the domestic economy. While there is evidence that the level of income could have at least been stabilized during this period through government expenditure restraint, it is unlikely that any set of realistically structured stabilization programs concentrating exclusively on demand management would have permitted a positive rate of increase in income or living standards. Jamaica's prime minister during this period, Michael Manley, was particularly critical of the Fund's approach to stabilization. On a general level, Manley's position was that:

In the average Third World country, the problem is not the search for markets for, say, a sophisticated wheat farmer already capable of high levels of productivity. The problem is how to get a simple peasant hillside farmer to become an efficient producer in the first place; how to find the capital with which to help him terrace his hillside; how to find the money for the extension of services to ensure that he is trained in the use of fertilizer and followed up, at first to ensure that he applies the right one at the right time in the right amount....The problems therefore, are structural and fundamental. The right demand climate can provide the framework within which production increases but cannot as it is assumed to do in a developed country, create the increased productive capacity. [Ref. 61]

With regard to the IMF type demand management, Manley's position was that:

For developing economies, this kind of short-term sharp demand management approach is inappropriate. What is needed is that the whole analysis should begin at a different point. The fact of the foreign exchange shortage is not the correct point of departure. That is to be found much earlier in the process by examining the structural deficiencies of the particular economy. The

approach should therefore begin with a plan for the development of a necessary productive capacity. There should be not attempt to impose upon the client economy a particular type of economic model. If the country wished to pursue a capitalist path--well and good. If they wish to pursue a socialist path--well and good. If there's a mixed economy option--so be it. Whichever the model, the search must be for the development of a productive capability that exploits the natural advantages of the society and aims for the most rapid development of its production for home needs and trade. Clearly this contemplates development planning of seven to ten years' duration at least. [Ibid]

And with regard to foreign exchange, Manley's position was that:

Particular attention must be given to the foreign exchange that is needed early up front: an economy cannot recover under a plan which begins to stumble and gasp for air at the very first hurdle because there is not enough oxygen for the system at the start....Great care has to be taken with demand management itself, lest the social shocks to which the population in the ailing economy is subject are greater than it can bear....We never questioned the IMF insistence on strict financial controls. We tried to apply these ourselves and were glad of their assistance in devising better methods. The quarrels were about strategies, time spans, capacity to endure, levels of shock, maintenance of foreign exchange flows, relative roles for private and public sectors, and the like. [Ibid]

The Manley government which came to power in 1972 did in fact inherit an economy which had experienced rapid growth, but which suffered from some serious structural deficits.

They included:

1. a policy bias against the agricultural sector, the traditional source of Jamaica's employment opportunities;
2. an industrial sector which had grown under excessive protection and had become inefficient, highly import dependent and capital intensive;
3. increased pressure on urban centers due to migration from rural areas; and
4. a widening income inequality.

The development strategy of the Manley government in terms of economic diversification, an expanded public sector role, employment promotion and redistribution of income, created an atmosphere of uncertainty with the immediate result of reduced investment activity by the private sector. As we have noted above, the situation was further aggravated by the increase in petroleum and other commodity prices, the world recession of 1974-75, the drying up of foreign commercial bank lending and labor problems in some of the key sectors.

The pertinent question is whether there is any middle ground between the Fund's short run demand management policy mix and Manley's more structurally oriented longer run adjustment approach.

In this regard, the Manley administration was heavily influenced by the vision of what has been called the "structuralist school" in development economics. [Ref. 62] This vision underplays the role of markets and prices as tools of resource allocation for economic development. It assumes a benevolent government machinery that can in principle ascertain the optimum allocation of resources for "maximizing the national welfare," and has instruments to achieve such an allocation. In determining the optimum allocation, this view emphasized sectoral balances and self-sufficiency in production rather than prices and costs; for achieving the optimum it preferred to manage quantities rather than prices, implying either that the latter are not

adequately effective tools of allocation or that they had perverse welfare implications. According to this view, the distortions that occurred in prices while quantities were manipulated were therefore either innocuous or necessary for achieving social objectives.

This particular approach to development has been seriously questioned in a recent major study. [Ref. 63] In this study, Agarwala defined price distortions to exist when the prices of goods and services, as well as capital and labor departed from "equilibrium" prices. Since in practice these are difficult to define, some approximations were used by Agarwala. For example, as a measure of distortions in the pricing of foreign exchange, changes in real effective exchange rates from a base period were used, together with the "effective protection" or taxation of traded goods. Similar distortions in interest rates were judged by how far they had been negative in real terms rather than by deviation from market clearing prices.

Based on this approach, Agarwala classified countries into three broad categories of distortion--high, medium and low and an attempt was made to obtain average indicators for the decade (1970s) of growth performance as well as for price distortions. Based on this classification, Jamaica (Table XVIII) was placed in the high overall distortion group with medium distortions judged in Jamaica's exchange rate, in the protection of manufacturing, high distortions in the capital

TABLE XVIII
DISTORTION INDICES AND VARIOUS COMPONENTS OF GROWTH DURING THE 1970s

	Distortion Index	Annual GOP growth rate	Average domestic saving income ratio	Average return on investment	Annual growth rate of agriculture	Annual growth rate of industry	Annual growth rate of export volume	Percent of income going to bottom 40 percent
Malawi	1.14	6.3	14	25.3	4.1	7.0	5.7	24.5
Thailand	1.43	7.2	21	27.6	4.7	10.0	11.8	15.2
Cameroon	1.57	5.6	18	26.3	3.8	8.6	2.5	-
Korea	1.57	9.5	22	31.1	3.2	15.4	23.0	16.9
Malaysia	1.57	7.8	20	32.6	5.1	9.7	7.4	10.6
Philippines	1.57	6.3	24	23.1	4.9	8.7	7.0	14.2
Tunisia	1.57	7.5	27	31.4	4.9	9.0	4.8	15.0
Kenya	1.71	6.5	19	32.7	5.4	10.2	-1.0	8.9
Yugoslavia	1.71	5.8	27	18.4	2.8	7.1	3.9	18.7
Columbia	1.71	5.9	22	27.4	4.9	4.9	1.9	10.1
Simple group average	1.56	6.8	21.4	27.6	4.4	9.1	6.7	14.9
Ethiopia	1.86	2.0	8	30.7	0.7	1.4	-1.7	-
Indonesia	1.86	7.6	22	40.1	3.8	11.1	8.7	14.4
India	1.86	3.6	20	15.6	1.9	4.5	3.7	16.2
Sri Lanka	1.86	4.1	13	22.2	2.8	4.0	-2.4	19.2
Brazil	1.86	8.4	22	35.5	4.9	9.3	7.5	7.0
Mexico	1.86	5.2	22	23.4	2.3	6.6	13.4	9.9
Ivory Coast	2.14	6.7	24	25.5	3.4	10.5	4.6	20.0
Egypt	2.14	5.9	17	24.2	2.7	6.8	-0.7	14.1
Turkey	2.14	5.9	17	24.5	3.4	6.6	1.7	11.4
Simple group average	1.95	5.7	17.8	26.9	2.9	6.8	3.9	14.0

TABLE XVIII (continued)
DISTORTION INDICES AND VARIOUS COMPONENTS OF GROWTH DURING THE 1970s

	Distortion Index	Annual GDP growth rate	Average domestic saving income ratio	Average return on investment	Annual growth rate of agriculture	Annual growth rate of industry	Annual growth rate of export volume	Percent of income going to bottom 40 percent
Senegal	2.29	2.5	8	12.8	3.7	3.7	1.2	9.4
Pakistan	2.29	4.7	7	28.1	2.3	5.2	1.2	20.2
Jamaica	2.29	-1.1	16	(0)	0.7	-3.5	-6.82	8.2
Uruguay	2.29	3.5	14	20.9	0.2	5.2	4.8	16.6
Bolivia	2.29	4.8	20	22.7	3.1	4.3	-1.6	13.0
Peru	2.29	3.0	21	21.5	0.0	3.7	3.9	7.0
Argentina	2.43	2.2	22	10.7	2.6	1.8	9.3	14.1
Chile	2.43	2.4	14	15.1	2.3	0.2	10.9	13.4
Tanzania	2.57	4.9	12	23.9	4.9	1.9	-7.3	16.0
Bangladesh	2.57	3.9	2	22.3	2.2	9.5	-1.9	18.2
Nigeria	2.71	6.5	21	23.8	0.8	8.1	2.6	-
Ghana	2.86	-0.1	9	(0)	-1.2	-1.2	-8.4	-
Simple group average	2.44	3.1	13.8	16.8	1.8	3.2	0.7	13.6
Overall Average	2.01	5.0	17.4	23.2	3.0	6.1	3.6	14.2

Sources: World Bank, World Development Report 1983, and World Bank Data Bank.

- Indicates data not available
Price distortions for the decades were heavily influenced by the policies of the Allende regime, which ended in late 1973.

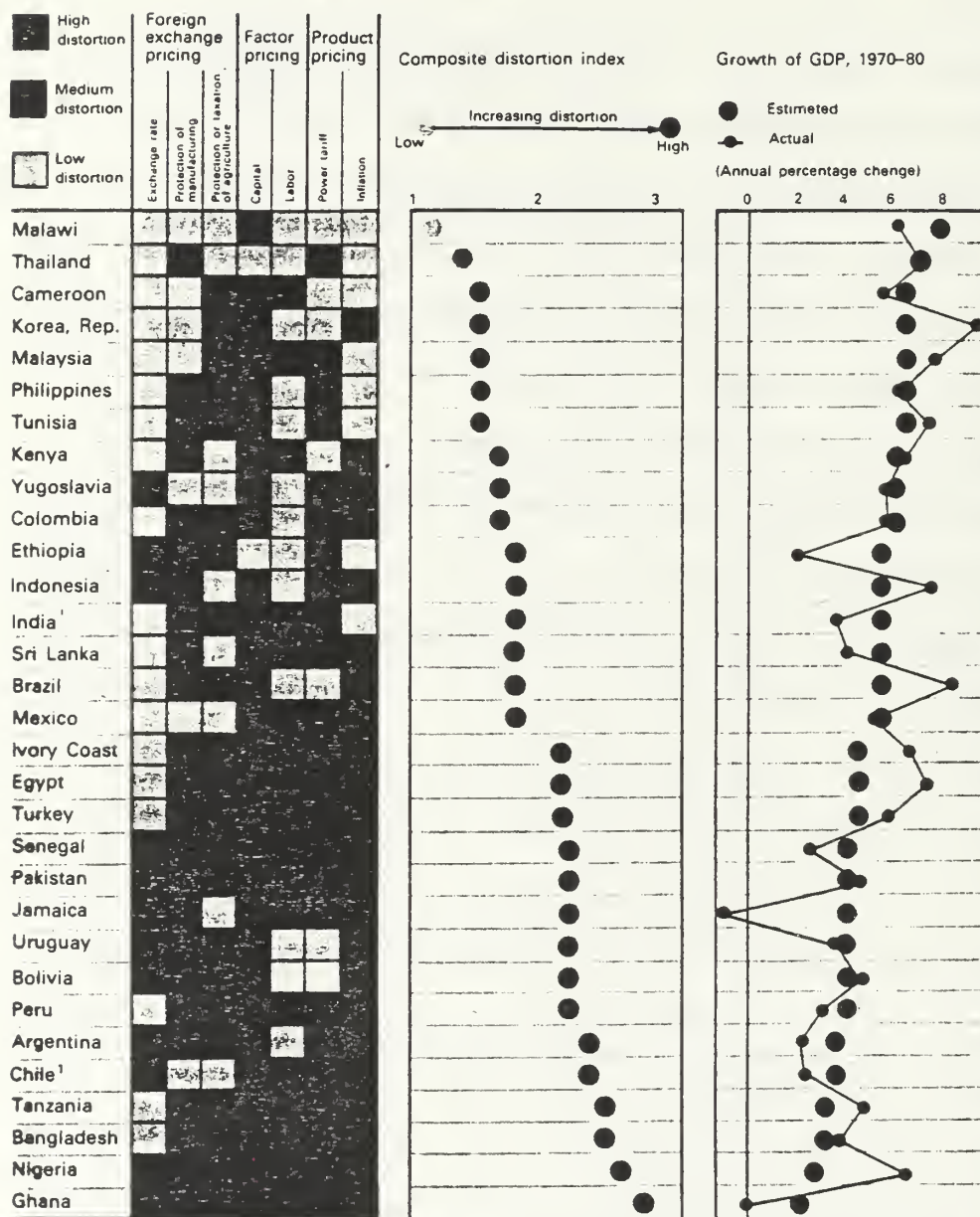
and labor markets (together with inflation), and a low distortion in the protection or taxation of agriculture (Figure 1).

Agarwala found that the relationship between price distortions and growth seemed to operate through both resource mobilization and the efficiency of resource use. The average savings rate and returns on investment in the high distortion countries (Jamaica was classified in this group) were lower than average, and these two effects added up to 2 percentage points of their GDP growth.

When growth and price distortions were cross-classified by rate of growth and degree of distortion, it is interesting to note that none of the countries with low distortion had a low GDP growth rate; in fact, none had growth rates below 5.5 percent a year. Neither the lack of natural resources (for example, in Korea), nor the early stage of development (for example, in Malawi), nor the socialist system (for example, in Yugoslavia) seemed to be insuperable barriers to policies of right prices (low distortions) and high growth. With one exception, which had obvious special characteristics (namely, Nigeria), none of the countries with high growth rates had high distortions; 60 percent of them had low distortions.

At the opposite end is the experience of the low growth countries: none of them had low distortions, while 80 percent had high distortions. Here, again, neither the availability of resources (for example in Peru or Chile)

Price distortions and growth in the 1970s



Source: World Bank, *World Development Report 1983*.

Note: In this figure, countries are listed in order of increasing degree of distortion in prices. In the first section, the color of the squares indicates the degree of distortion in the principal categories of prices. The middle section is a composite index of price distortion for each country: as a country's distortion index increases, the color of the circle changes from gray to red. In the right hand section, the small circles show the actual annual rate of growth of GDP; the large circles are estimates of GDP growth obtained by a regression relating growth to the distortion index.

¹Price distortions for the decade were heavily influenced by the policies of the Allende Regime, which ended in late 1973.

Figure 1.

nor the stage of development (for example in Argentina) was adequate to prevent low growth when price distortions were high.

A sample regression of growth rates on Agarwala's distortion index showed the latter to have been a statistically highly significant variable for explaining growth in the 31 countries considered although it accounted for only 34 percent of the variance of growth. Countries that had significantly negative deviation from regression estimates were: Ethiopia, Jamaica, Ghana and India. "For the first three, political factors probably played a key role; for India, bureaucratic rigidities relating to licensing and the control system probably accentuated the losses resulting from the distortions in the pricing system."

While price distorting policies were justified in Jamaica on the basis of their income distributional impact (low interest rates, high wages, low infrastructure prices, and import restrictions designed to help the low income groups), Agarwala's analysis for 27 countries for which figures were available on income distribution show that the distortion index explained barely 3 percent of the variation in equity (when the latter was measured by the proportion of income going to the poorest 40 percent of the population).

In short, cross section analysis of developing countries in the 1970s confirms the view that price distortions hurt growth, particularly when the distortions assumed high

proportions. Countries with low distortions were found to have relatively high growth. There is no evidence that price distortions helped equity. In fact, they may have hurt equity, in addition to creating serious administrative problems and corruption.

It appears therefore that there was ample scope for supply side measures in Jamaica during the 1970s. As implied by Agarwala's work, these supply-side policies must be specifically directed towards the removal of distortions and other structural impediments to rapid economic growth. To the extent that such supply oriented adjustment measures could succeed in their objective of increasing the capacity level of output in Jamaica, the macroeconomic model developed above indicates that they will have effect on other major variables in the economy, including monetary variables and the balance of payments.

The simulation of the supply side policy traces these effects. Given the microeconomic character of most supply side policies outlined above, no attempt is made here to specify the precise nature of the measures that could produce this result. Instead, the purpose of this simulation is to determine the effects of a given increase in the level of capacity output, assuming it can be achieved, on other variables that are important targets in the stabilization program.

The supply side optimal control programs (Table XIX) were structured to be comparable with the demand oriented simulations summarized earlier. In runs IA through IID, it is assumed that initiation of the price distortion measures during the 1977-80 period were capable of increasing the level of productive capacity by 5 percent per annum--(YHTE) in the gross domestic product equation.

In run IA (Table XIX) with capacity output increasing at 5 percent over its level in the 1977-80 period and government real expenditures held at their 1976 levels, the following occurred:

1. Real gross domestic product is able to expand by 2 to 3 percent per annum and private investment by 2 to 7 percent per annum.
2. There is a dramatic improvement in the current account, however, the overall reserves position of the country deteriorates somewhat compared with the purely demand management program (run I in Table XIX)

Increases in the average annual rate of real government expenditures above 2 percent per annum would result in a decline in real income, albeit some gain in total foreign reserves. As might be expected, dramatic increases in capacity output (10 percent per annum) between 1977 and 1980 produce corresponding gains in real output and enable personal consumption to stabilize at slightly above its 1976 level (run IIE).

H. SUMMARY

To summarize, the optimal control simulations suggest that all three types of policy measures--demand management,

TABLE XIX
JAMAICA: OPTIMAL CONTROL SUPPLY ORIENTED STABILIZATION PROGRAMS, 1977-1980

Macroeconomic Indicator	Actual Values		Optimal Control Run Values for 1980			
	1976	1980	11A	11B	11C	11D
Gross Domestic Product	6693.1	4760.4	7335.2	6993.1	6641.6	5539.5
Private Consumption	4676.1	3109.2	4264.5	4131.1	3994.1	3588.5
Private Investment	940.8	304.9	1047.5	959.6	861.7	564.3
Total Reserves	29.5	187.0	108.7	117.6	128.1	149.6
Real Government Expenditure	1786.2	2351.9	1786.2	1858.7	1933.4	2171.1
Consumer Price Index	0.405	1.00	0.788	0.807	0.816	0.850
Change in Current Account	-19.8	-27.1	39.1	33.9	27.0	10.8
(Average Annual Change 1976-1980)						
Gross Domestic Product		-8.2	2.3	1.1	-0.2	-4.6
Private Consumption		-9.7	-2.3	-3.1	-3.9	-6.4
Private Investment		-22.4	2.7	0.5	-2.2	-12.0
Total Reserves		58.8	38.5	41.3	44.4	50.1
Real Government Expenditure		7.1	0.0	1.0	2.0	5.0
Consumer Price Index		25.3	18.1	18.8	19.1	20.4
						16.4

NOTES: See text for assumptions made in each optimal control run
The 1980 values for the change in current account are the average changes over the 1976-80 period.

devaluation, and supply management--are "effective" in the sense that they have non-negligible effects on the macro-economic quantities that are the major target variables of the Jamaican stabilization programs. While this conclusion may seem self-evident to some, it needs to be reiterated because some well-known historical studies of stabilization programs [Ibid] have concluded that orthodox demand management policies were ineffective in achieving these objectives, while others have denied that supply-oriented policies can play any significant role in economic stabilization programs.

More importantly, this analysis shows that although the three policies have somewhat similar impact on the overall balance of payments and international reserves, both the direction and the time pattern of their effects on other important variables--particularly prices, output and consumption--are quite different. This suggests that, in principle, it would have been possible to find a combination of policy measures that would have allowed a stabilization program in Jamaica during this period to achieve its major objectives at a smaller cost, in terms of undesired changes in other important economic quantities, than the program actually undertaken.

Finally, the simulation results clearly show that successful supply-side policies could have mitigated the adverse income effects of stabilization via demand restraint, but given the current state of the art, the difficult practical

question of exactly how supply management policies could have been implemented and how long they might have taken to achieve their effect remains unresolved.

I. CONCLUSIONS

In view of the widespread interest in the balance of payments problem faced by Jamaica during the 1970s and its policy implications, the paucity of empirical work on this subject is quite surprising. To this point the thesis has attempted to further this discussion by examining the direct quantitative relationship between variations in the current account position and a set of factors that were assumed to be its main determinants.

The empirical tests here support the hypothesis that external factors (as represented by the slowdown of economic growth in industrial countries but not by the decline in terms of trade) were relevant in explaining the deterioration of the various measures of the balance of payments. Domestic factors (as captured by the increase in real government expenditures trend) were also relevant in explaining the deterioration of the current account.

Thus, the empirical results suggest the importance of exercising circumspection in attributing to any single cause the current account imbalance experienced by the country in the 1970s.

It has sometimes been asserted that the nature of a balance of payments stabilization program depends on the

origin, or proximate cause, of disequilibrium. This view asserts that if a payments deficit is the result of excessively expansionary demand management policies; the appropriate cure involves domestic demand restraint, whereas if the problem is caused by exogenous factors such as a decline in the income growth of the country's major trading partners, no adjustment is necessary and foreign financing should be provided.

Since the results here indicated that both types of factors were at work during the 1970s, and as it is extremely difficult to separate the relative contributions of domestic and external factors to current account instability, it would seem to have made more practical sense to adopt an alternative view than that adopted by the IMF. In this context the question of whether a deficit ought principally to involve adjustment or financing should depend on whether the imbalance is viewed as domestic or external. If developments that give rise to balance of payments difficulties are of an external origin and are expected to be short lived and self-reversing, they may involve the need for temporary financing; permanent changes on the other hand involving a domestic management necessitate adjustments of the basic supply/demand balance of the economy.

While one can argue that the slowdown of growth in industrial countries and the sharp rise in foreign real interest rates have been a transitory phenomena and were

likely to be reversed in the near future, the shock caused by the increase in OPEC prices appears to have been more in the nature of a long term change. Some financing of the deficits created by the increased oil import bill occurred, but the situation also called for a substantial adjustment effort. In terms of the frame of this chapter, evidence of insufficient adjustment in Jamaica has been seen in the rapid increase in government expenditure during the 1970s above their historical trend. Suitable adjustment would have meant pursuing a more flexible exchange rate policy, supplemented by the application of a broad range of supply management policies. Clearly the continued deficits into the 1980s indicated that the country not only suffered from adverse international developments but also from domestic developments during the 1970s.

The empirical work summarized above also supports some of the conclusions other writers have noted about the attempts to cure instability during this period: [Ibid]

1. While the Jamaican authorities had allowed the economy to deteriorate drastically before going to the Fund, the conditions required for this agreement were all out of proportion to the resources the Fund made available. Even if the agreement was seen by the Fund as a test of the government's determination to implement tough stabilization measures, the size and conditionality of Fund resources provided little scope and encouragement for the government to adhere to this goal.
2. Whether or not factors outside the control of the authorities had been the main cause of Jamaica's stabilization problems, substantial foreign assistance was required to support a viable stabilization program

and reduce the social and economic costs of adjustment to a level that was not impractical. Although subsequent agreements display an increasing awareness of the need for economic and politically feasible adjustment costs, and longer periods of adjustment, insufficient attention was paid to these matters in 1977.

3. In the case of Jamaica, Fund agreements after 1977 could not quickly dispel the uncertainty surrounding the domestic policies of the PNP which earlier had been the main cause of the decline in real GNP and international reserves. The ambivalent attitude of the authorities towards the implementation of stabilization measures persisted through 1977-80 and the inadequate and irregular supply of imports continued to restrain the recovery of the domestic economy. Hence, Fund stabilization programs proved to be far from sufficient to revive local and foreign investor confidence and promote export-led growth.
4. A sharp change in government policies and attention to stabilization measures was required to arrest the decline in real incomes and foreign reserves.

The experience of the Jamaican economy adds support to the claim that there are fundamental laws and constraints for socialist and other developing countries alike, namely:

A country that raises wages and vastly increases the government's budget at a time when productivity and aggregate supply are falling will bet itself into a first class economic mess. [Ibid]

By 1980, Prime Minister Manley had left Jamaica in a dismal economic condition. The country was on the verge of bankruptcy, with high inflation, high unemployment, and domestic unrest. Consequently, U.S. security interests in that region were being undermined.

The next chapter will look at the Jamaican situation after Edward Seaga was elected to office in 1980. His return to office marked a major reversal in Jamaican politics and was

widely viewed as vindication of Western ideals. Faced with an array of inherent and inherited economic problems it became evident that the United States needed to lend some assistance if Jamaica as well as the entire Caribbean region was to become economically viable. In Chapter II, this thesis explores some of the history for the CBI legislation and, through economic modelling, forecast alternative approaches to various policies.

II. JAMAICA: THE 1980s

A. INTRODUCTION

The intent of this section is to determine what effect the CBI is likely to have upon the Jamaican economy and consequently how U.S. security interests will be served. The ensuing discussion will also address both the history and content of the current version of the CBI. Lastly, this chapter will attempt to predict on the basis of several macroeconomic models, the expected results of various policy options.

The macroeconomic modelling will be presented after various viewpoints of the current issues regarding the Jamaican/Caribbean region are discussed. These are the views of the Reagan administration, opponents of the CBI, and finally the private sector, with particular emphasis on the business investors.

It is important to have some definitions clear which will provide a common understanding. The first definition of particular importance is that of the Caribbean Basin, which countries are involved? As set forth by the House of Representatives, the following countries may be designated as beneficiary countries by the President of the United States as he so desires. [Ref. 64]

Anguilla	Honduras
Angigua	Jamaica
Bahamas	Nicaragua
Barbados	Panama
Belize	Saint Lucia
Costa Rica	Saint Vincent and the Grenadines
Cuba	Suriname
Dominica	Trinidad and Tobago
Dominican Republic	Cayman Islands
El Salvador	Montserrat
Grenada	Netherlands Antilles
Guatemala	Saint Christopher-Nevis
Guyana	Turks and Caicos Islands
Haiti	Virgin Islands, British

In addition, the President shall not designate any country a beneficiary under this law if it is a Communist country or breaks any of the other numerous rules specified in "H.R. 2769" of the 98th Congress.

At a glance, this list of countries includes many countries one normally would associate with the Central America isthmus. However, due to the close proximity of the Caribbean Island Nations to the Central American countries, the House of Representatives considered it necessary to include the Central America isthmus as part of the Caribbean Basin as the entire region is one geostrategic area.

The final issue to be clarified before presenting the tri-opposing viewpoints of the CBI, is what exactly is the Caribbean Basin Initiative, and how does it differ, if at all from the Caribbean Basin Economic Recovery Act?

The Caribbean Basin Initiative is a ground breaking development program which combines trade and tax liberalization with tailored financial assistance programs to promote a self-sustaining revitalization of the economies of the 28 nations of the Caribbean Basin. The measures are designed to catalyze expansion of local productive capacity, as well as to assist a key service sector of their economies. The CBI is really a combination of several different initiatives: a legislative program of trade and tax benefits adopted by Congress in 1983; an increase in foreign economic assistance and foreign aid programs; and a multilateral program which coordinates the efforts of several other donor countries in this hemisphere to assist the region. The entire initiative has received broad bipartisan support. It was conceived during the Carter administration and President Reagan embraced the plan fully and urged its adoption. Democrats and Republicans in congress worked closely together for its final passage.

The Caribbean Basin is presently in the throes of critical economic and political dislocations. The small and fragile economies of this region have been seriously affected by escalating costs of imported oil, declining prices for their major exports (sugar, coffee, etc.), a shrinking of export markets due to worldwide recession, and a decline in tourism. The cumulative GNP of these nations is only 40 billion dollars annually. Collectively, their balance-of-trade

deficit, per capita, is more than three times the size of the U.S. trade deficit with Japan. To meet the soaring cost of imports, which are essential to the smooth functioning of their economies, these nations must now sell far greater quantities of their traditional export goods than was the case only seven years ago. In 1977, one barrel of oil cost a Caribbean nation the equivalent of five pounds of coffee, or 155 pounds of sugar. [Ibid] For these nations to buy the same barrel of oil today, they must sell approximately five times as much coffee or almost twice as much sugar. •

Social unrest, born of the frustrations which come from rapidly contracting economies, has brought the threat of violent confrontation between the people and their elected governments. Even the exercise of democratic choice at the polls has been insufficient to overcome the sense of despair that leads individuals and communities toward radical and self-defeating solutions to domestic problems. As the freely-elected governments of the region have sought to grapple with the job of managing their public sector, they have been thwarted time and again by the accelerating downward slide of their economies.

The Caribbean Basin Initiative offers the beneficiary nations the prospect of important new investors in the agricultural and manufacturing sectors of their economies. By providing the Caribbean special access to the US market under a concessionary trade agreement, a new dimension will

be added to the investment analyst's view of the Caribbean as a target for new venture capital. New capital will soon generate new export income in non-traditional as well as traditional export products. For the Caribbean states, these export earnings will hopefully provide the wherewithal to reduce social tensions through improved living conditions for all members of their societies.

Other important countries in this hemisphere have participated in new programs to assist the Caribbean Basin. Specifically, Canada, Mexico, Venezuela, and Columbia have joined with the United States in a multilateral action program to restore stability and prosperity to the Caribbean Basin. Mexico and Venezuela have contributed to this effort through a "joint oil facility", under which these governments extend minimum interest loans to the nations of the Basin from funds stemming from their sales of energy products in the region. Canada has pursued major increases in its foreign assistance to the area and important increases in its on-site trade and investment counselling. Columbia initiated a technical assistance program in the area and plans to increase its financial contributions and ultimately to implement concessionary trade policies.

The Caribbean Basin Economic Recovery Act was approved by the Congress in July, 1983 and signed by the President on August 5, 1983. Earlier Congress had approved supplemental financial assistance, which was a part of the President's original proposal.

The centerpiece of this legislation is a temporary extension of one-way, duty-free access for the Caribbean nations. Duty-free treatment is to be extended on all products with the exception of textiles and apparel, footwear, petroleum, leather apparel, and canned tuna fish. The granting of duty-free access will be uninterrupted for a period of 12 years. The program will be a significant improvement for the Caribbean countries over their current access either on a most-favored-nation basis or under the Generalized System of Preferences (GSP). While approximately 80 percent of Caribbean Basin non-petroleum exports currently can enter the United States duty-free, many potential Caribbean Basin exports are denied duty-free treatment. Further, the legislation provides a security of access not otherwise provided for under GSP. For example, there will be no annual review of product coverage.

Duties on textiles and apparel products will not be reduced to zero under the free trade arrangement. The decision to leave these duties unchanged came in the context of the renegotiation of the international Multifiber Arrangement (MFA) which establishes a global trade regime on textile products. The global textile regime, organized as it is on the basis of bilateral quantitative limitations, could have been disrupted if a major importing nation had extended duty-free treatment for a single regional grouping. However, the President is committed to providing the Caribbean Basin more

favorable treatment for their textile and apparel exports. This can be accomplished while remaining with the parameters of our current textiles agreement program.

The free trade program also places a ceiling on duty-free entry of sugar for so long as the United States is protecting the domestic sugar price through a support program mandated by Congress.

The Act also provides for a deduction by U.S. taxpayers of business expenses incurred in connection with attending a convention in a beneficiary CBI country. This benefit will be extended only to those countries which enter into an agreement with the United States to exchange tax information. This important tax incentive should help to promote and revitalize the tourist industry throughout the Caribbean and Central America. Many countries already have a well developed infrastructure for tourism, while others have enormous potential as convention sites. In both instances, the convention deduction should greatly improve the local economies.

B. BACKGROUND

1. The U.S. Administration's Viewpoint

The Caribbean, an area of small and fragile economies in the best of times, has been among the hardest hit by recent international economic developments. It is a region which is adrift in the world economy and which is nearly defenseless today against the rapid fluctuations of the

international economy. As the basin economies have been battered by the oil price hikes and more recently the fall of sugar and other commodity prices, internal tensions have mounted. A setting now exists in which violence and political radicalism is flourishing.

These days many people forget how poor and under-developed the Caribbean Basin countries used to be and how dramatically they developed in the 1960's and 1970's. This does not mean either that it had completely escaped its under-development or that it had achieved acceptable levels of income for all its people, but simply that it was well on the way. The economies of the Caribbean are in critical need of a catalyst that will promote recovery. The United States today, has become acutely aware of the difficult problems besetting virtually all the world's economies. It is thought the CBI articulates in precise terms the urgent purpose to which this program is directed.

The native people of the Caribbean have been described as dynamic, hard-working, entrepreneurial, people who when allowed to work, have shown themselves capable of making significant efforts to advance themselves. Yet the present conditions of that region are not conducive to their potential efforts. On occasion there has been development of light manufacturing; development of agriculture and agricultural exports; development of labor-intensive industries for export out of the area, and the formation of a significant middle

class. One of the major objectives of the Marxist-Lenninist guerrillas in El Salvador and Guatemala is to destroy the economic potentials of the countries in order to seize power in the resulting chaos.

The people of the Caribbean are striving in the same way as are all the people of the Americas to find their place within the evolving world economy of the 1980's. But how can nations such as Jamaica achieve this goal in the face of economic obstacles which are posing a serious challenge to nations of many times their size and possessing far greater economic resources?

The beneficiary nations of the CBI are widely divergent in cultures, histories, languages, economies, and governments. But they share some common characteristics: Most are failing economically; they are increasingly oriented economically, politically, and socially to the United States, and together they form our southern border. Too long has the U.S. failed adequately to comprehend our national interest in this integrated region, and to take full advantage of the mutual opportunities greater cooperation offers. These interests are profoundly important and defined by George F. Kennan. "The first and most obvious (interest) was that one ought to protect the physical intactness of our national life from any external military or political intrusion--in other words that one ought to look to the national security--for only in the absence of hostile foreign interference could these

processes, in the usefulness of which we believed, be given full freedom to operate. Secondly, one could see to it that insofar as the activities of our citizens in pursuit of their private interests spilled over beyond our borders and into the outside world, the best possible arrangements were made to promote and protect them." And finally, Kennan postulated that "problems could then be solved not with regard to the ugly political realities of the moment but strictly on the basis of general norms of state behavior, laid down and accepted in advance. All that was needed was the framework, and this we Americans were eminently equipped to provide.... We saw ourselves moving benevolently, helpfully among the waiting people of the world....our virtues no longer just the virtues of the American frontier but the virtues of the world at large."

There is a realistic appreciation on the part of the leadership in the Caribbean Basin countries that the US program and other external donors, can only support what the Caribbean Basin countries do themselves. There is a determination that the people of the Caribbean Basin must confront their own problems. They need and want US help. But they also know that outside help in and of itself will not do the job. This is the single most important element in a successful development effort. Therefore both parties have achieved a solid base for partnership among local and external efforts which will turn this crisis around. The President's message

in the CBI program is that it was designed to let the people of the Caribbean earn their own way. It was developed in close consultation with more than two dozen nations of the Caribbean Basin which are the potential beneficiaries. More than anything else this program gives expression to the ideas of the people of the region and speaks directly to their aspirations for the future which they will build for themselves.

The importance of the President's message may be as important as one of a past President. President Monroe, in December 1823, sent a message to Congress declaring that the United States would view as a threat to its own security any attempt by a European political system or sovereignty upon the republics of the American continents. The core idea of the Monroe Doctrine is that the new lands of this hemisphere must remain free from outside intervention in order to pursue their own destinies in peace, today endure more vitally than ever. But the nature of the threats, enemies and solutions have changed markedly in 161 years.

The President's CBI program is designed to help the Caribbean Basin countries each create a new productive capacity and take better advantage of existing resources. The comprehensive package of trade, investment and aid is aimed both at addressing the critical short-term economic problems facing the Caribbean countries and at laying a solid foundation for long-term economic growth and development in the Caribbean in order to resist communist aggression. The

Caribbean Basin Initiative is a response to regional economic problems which must be addressed if the U.S. hopes to live in a hemisphere free from the suffering that is now so vividly apparent in the Caribbean. The CBI is an all inclusive program that addresses both long-term and short-term problems and contains the flexibility that is needed to respond to the development of obstacles of individual countries. It is one element of a broader regional program that can transfer the Caribbean Basin from a region of despair and frustration into a region of peace and freedom. Most important of all, it is designed to foster self-reliance.

In a region suffering a history of conflict, the recently emergent nations of the Caribbean Basin offer a tempting target for Soviet troublemaking. The announcement in 1983 by the Kremlin that a Soviet aid package was headed for Grenada, the express purpose of which is to abrogate the historic Western ties of that island nation, provides a timely example of a real concern for our borders, our sea lanes, the Panama Canal, and US security in general.

The United States has great economic ties to the region. Despite their colonial past, the CBI countries import more from the United States than any other country. In 1982 this amounted to over \$6 billion, double what we imported from them, excluding petroleum. US direct investment reached nearly \$10 billion in 1981. The US imports over 90 percent of our industrial requirements of bauxite and alumina from

the Caribbean countries, and it relies on them to a significant degree for nickel. It seems clear that the region offers a vast market for American products, if only greater economic and political stability can be brought about. [Ibid]

Besides economic and security interests, the United States is bound by an increasing web of social ties with the Caribbean Basin countries. Some estimate that, excluding Mexicans, over 250,000 illegal immigrants now enter the United States yearly from the countries of the Caribbean Sea and Central America. Their desperate desire to seek political or economic emancipation in this country is perhaps matched only in magnitude by the strain on the services of our National and State governments provide them once they are here. It should be noted that for the entire region in fiscal year 1982 the United States targeted about \$475 million in developmental aid; the Federal Government and the State of Florida have spent over twice that on Cuban and Haitian refugees since the Mariel boatlift.

The ability of the United States to exploit these increasingly strong ties to the Caribbean Basin countries rests on its own stability. As the nations of Central America struggle to end armed conflict among themselves and with Communist guerrillas, the island Caribbean nations attempt to restructure their economies away from centuries of dependency on transfers from their former colonial sovereigns. A historic opportunity presents itself to the

United States to aid in placing them on firm, permanent path to growth and stability. The President's Caribbean Basin Initiative embodies a sound plan to that end.

The CBI comprises trade, aid and investment in an integrated plan to foster market-oriented growth among the beneficiary nations. The market opportunities created by the trade and tax incentives, together with the aid necessary to restructure debt and build essential infrastructure, constitute an unparalleled opportunity for self-help and permanent improvement.

The peoples of the Caribbean, however do not want to leave their homelands to find liberty. They know that given the opportunity, their indigenous skills, industry, and entrepreneurial talents provide the basis for creating havens of peace and prosperity at home. The integrated, market oriented plan of the President will provide the surroundings in which their talents will thrive. The U.S. must create this favorable climate or possibly loose the region to communism.

The people of the Caribbean are in such bad economic shape most of them will flirt with any economic support as a possible alternative that might improve their lot. If you are a poor person in the Caribbean Basin, one who is relatively uneducated, who has had no opportunity for exposure to what really is going on outside of your own little country, you may readily accept economic aid that will end up putting

you into socialistic bondage. For instance, Cuba receives 9 million dollars a day in aid from the Soviet Union. However, it does not function appreciably better than most of the other socialist countries. The average citizen does not have anymore money than he did before socialism, but he has less freedom.

This initiative is not and should be a partisan matter. Every administration in the postwar era has understood that the Caribbean Basin is critical to both our security interests and our long term economic well-being. What set the CBI apart from previous attempts to aid the region is that it is designed to let the region help sustain itself, not just through direct grants of aid but through the economic incentive of increased trade.

The US national economic and security interests in the Caribbean can be stated in more hard-nosed terms. Nearly one-half of the US trade passes through the Caribbean and two-thirds of our energy imports move through the sea lanes of the Caribbean Sea.

The US sells the Caribbean Basin around \$3 billion more in goods and services each year than we import from them. While the US exports more machinery and capital goods per capita than to any other developing region in the world. Still, the economic picture in the Caribbean is bleak, and the situation is not improving, and further deterioration is possible. There are over six million people living in the

Caribbean today who are surviving on family incomes at or below the level of minimum subsistence. In 1982, it was so bad in the Caribbean that there was a net capital disinvestment in manufacturing.

Caribbean commodity exports continue to fair poorly in world markets. This has resulted in staggering rates of unemployment in the rural communities of the Caribbean. The region's once active agribusiness sector is all but moribund. These economic problems will not be self correcting once the developed nations achieve full economic revitalization. The Caribbean needs US help. It is the Administration's view that the US can afford to give it. The Caribbean Basin nations have a total population which is about a fifth of the US. Yet in one week, we are able to produce as much food as they produce in one year.

In order to revitalize, the Caribbean must improve its commercial standing as a location for new permanent and productive investments. What these nations can do on their own, however, is limited by the favorable tax treatment of domestic investment expenditures which now is available to US investors under various tax incentives in the United States, including domestic investment tax credits.

Therefore, it is proposed to extend the same type of tax treatment for investments in Caribbean Basin property as is now available for domestic property. This would neutralize a US disincentive to investment in the target region, while

avoiding tax measures that might make investment decisions too dependent on US fiscal policy.

So in the case of both US trade and tax proposals a more amenable climate for commercial activity is being created. It should be remembered, however, that private sector initiative and market forces will determine ultimately the success of the joint efforts.

An important note about the concern in some quarters about the impact of the initiative on employment in the US. On this point, critics make one fundamental assumption about trade and economic relationships with which are incorrect. They believe that what the Caribbean Basin gains will be lost by the US. Trade is not a zero-sum game. All economic history proves it. Economic exchange occurs because both parties have something to gain from the transaction. Consequently, the increase in prosperity which we are aiming to achieve in the Caribbean Basin will not come at the expense of the US economy.

2. CBI Opponents

Regarding military and security assistance, the Congressional Black Caucus (CBC) stated in its testimony to the House of Representative's Subcommittee on International Economic Policy and Trade, that the U.S. is heading down a dangerous path by supplying arms to aggressive regimes in Latin America. The problems in Latin America do not lend

themselves to military solutions. The problems of historical poverty and oppression can be solved through economic and political reform and social justice. Instead, we are building bases in Columbia, South America, and in Central America. Poverty, oppression and underdevelopment in Caribbean and Latin American countries cannot be eliminated by overthrowing governments with which we disagree. Rather, the US must work for reconciliation of differences and grant assistance to eradicate the problems which have brought about discontent in the Western Hemisphere. The United States will have to learn to live with governments in the Caribbean and Latin American countries unlike our own. We must accept the fact that countries like those in the Caribbean and Latin America will sometimes follow paths of development with which we will not always agree. [Ref. 65]

The US has an unfortunate major stumbling block in our foreign policy which is racism. For example, the treatment of the Haitian refugees is a prime example of that kind of racism. Within the CBI there is virtually no mention of the enormous economic problems that create this flow of refugees, and there are no over-all solutions for the problems. Indeed, the very language of the CBI refers to the problem of "illegal immigration" as rationale for offering this country a paltry \$5 million dollars. The problem is viewed as a problem for the United States not a problem for the thousands of homeless and desperate Haitian refugees.

The CBI points to the Administration's racism, and warns that it has been a disease in our own country that has destroyed many of our own best intentions. It would be a tragedy to extend this disease into our foreign policy where black and brown cultures of the Caribbean are ignored or pushed on the back-burner; where attempts of countries like Mexico to take leadership in resolving conflicts are treated condescendingly; and where indigenous revolutions are credited to the Soviet Union. The US must begin to recognize these countries in their own right, as legitimate entities within the world of nations.

The CBI would like to separate the military aid out of the CBI and make it a purely economic assistance program. Those countries who want economic aid should be prepared to forfeit the military aid. This avenue would give a clear picture of what we intend for those countries and their people; US military assistance, and what the US feels necessary for other reasons involving the security of our own country should be separate.

The Reagan administration's CBI leaves much to be desired. The basic flaw of the administration's approach is one of misplaced emphasis. The CBI has been conceived, packaged, and presented mainly as a means to counter Cuba, not primarily as a way to respond directly to the needs of the people of the Caribbean. So, while attention is finally being paid, it is largely the wrong kind.

Although the CBI should be noted because it combines and coordinates several development instruments, the proposal is grievously flawed by its misplaced emphasis on military security and aboundless faith in the private sector. Moreover, the CBI suffers from its resemblance to "Dollar Diplomacy" in the region. In this context, the initiative is bound to be ineffectual. The blatant thrust of the program is that friendly and strategically situated countries will be supported and rewarded regardless of despotic records and that enemies and alternative regimes will be brutally punished and subverted. The thinly veiled bilateralism allows leverage that will be used to divide the Basin countries into foe and friend, oblivious to long-term development priorities. This thrust will work to force reformist, progressive elements in the region to cower, thereby retarding political and social maturation. A more comprising and constructive diplomacy would better serve the alleged goals of peace and stability; but American control and economic gain seem to be the goals.

The CBI recommends that legislative drastically amend the CBI package if taxpayer dollars are to be wisely used and the US's own best interest served. Specifically, it is suggested that the program include Cuba and Nicaragua, that it address the infrastructure needs of the area, that the investment incentives be tied to progressive levels of indigenous employment, and that the monies allocated to El Salvador and the American Institute for Labor development be reduced and redirected toward the Eastern Caribbean.

The concept of a Caribbean Basin is, in many ways artificial. Central America differs from most of the Caribbean Islands in culture, economic structure, and most importantly, in political institutions. In the Dominican Republic and much of the English speaking Caribbean, the CBI has a better chance of success on the Caribbean Islands and Panama, where the requisite political stability exists.

In middle Central America, however, the political status quo has been challenged by powerful insurgencies, and violence and chaos are tearing at the foundations of society. At bottom, the administration is more concerned about the political turmoil and economic decline in Central America than about the Caribbean Islands. This priority is reflected in the fact that \$234 million of the \$350 million of the proposed emergency supplemental assistance package is earmarked for Central America.

In Central America, the administration's economic and political strategies have been working at cross purposes. The administration's economic plan aims to stimulate business, but a confrontationist diplomacy threatens to delay the restoration of investor confidence. Rather than seriously pursue negotiation among all the major parties to the conflict in El Salvador, the administration has supported a political process that has excluded important political sectors to defeat them militarily. The recent elections suggest the Salvadoran people want peace, but the outcome of the elections seems likely to increase polarization and violence.

Rough calculation show the United States will benefit more than the Caribbean, especially in the area of potential repatriation of profits from the investment that is likely to flow into the region, and on the basis these calculations over this twelve year period, at about the six year point, the repatriation of profits are likely to offset the annual inflow of private capital going to the region. So that in fact, the United States will turn out to be a major beneficiary as far as sending private capital into the region is concerned. The CBI is primarily intended to benefit US interests and that its long term impact on the countries in the region is likely to be negative. Its main impact would be to enhance American access to and control over local resources and to increase their economies' dependence on the United States while weakening the economic links that presently exist within the region. Regional mechanisms of cooperation, it was pointed out, are being sidestepped and undermined.

The intrinsic problem with the CBI, is that it is a continuation and an even more cynical manifestation of long-standing American policy toward its neighbors in the Western Hemisphere. Caribbean and Central America countries were specifically chosen at this time for special treatment due to their perceived strategic importance, but the United States, it is pointed out, always has considered the region as a resource base. Accordingly, it has encouraged and supported an excessively free market model of development in the private

sector. Hence, the initiative is the economic component of a US effort to maintain and enhance its domination of the region.

The proposal seeks a strengthening of economic ties which will assure to raw materials, provide investment opportunities, and preserve traditional markets for US goods. With foreign direct investment generally declining, American taxpayers are being asked to pay for financial incentives to encourage US based multinationals to seek investment outlets and production bases from which to export to the United States. Trade dependencies are also being deepened, in response to threats from trade competitors, in an attempt to redirect trade away from excolonial powers in the region. In effect, the United States, is trying to firmly establish a Third World development model, a model of Caribbean dependency on the United States.

3. U.S. Business Investors

During the hearings by various subcommittees of the House of Representatives on the CBI much testimony was provided by business that the CBI addresses the basic issues which exist in the Caribbean region; like unemployment, little or no opportunity and the resulting political instability. The economies of the Caribbean countries are fragile at best. Since these countries are so small and independent, they must have economic aid to diversify in order to prosper. Additionally, these countries must have access to American markets to increase viability.

Economic growth in jobs and economic stability are the only things that can create political stability in the Caribbean region in the long run. Therefore, the CBI's tax credits and tariff-free provisions address these needs. The almost landslide victory that Prime Minister Seaga was given by the Jamaican people in the last election, proves the fact the people of the Caribbean want to identify with the democratic institutions of the United States, that they want to identify with our market economy, but they just do not have the ability at this point. They need jobs and a viable economy. The CBI is not a government giveaway, but only a Caribbean opportunity. In order to take advantage of this opportunity, the individual nations of the Caribbean Basin are going to have to work hard themselves they must do so with US assistance in exploiting the opportunity that the CBI would give them in finding access to the US markets, and build up their own local economies that would be afforded in that manner.

For the CBI to work effectively, it is basic to guarantee the security of the area. Guerrilla advances in El Salvador and Guatemala and budding terrorism in Honduras and Costa Rica have eliminated the possibility of economic stability and growth in the region, until they are controlled. Right now, businessmen of the American chambers in the area, are trying to hang on until the situation stabilizes. Until the present threat of a communist takeover of the area is

eliminated, none of the medium term incentives of trade and investment will function effectively. For the CBI to work, there is a very brief time frame or "window" with which to be successful. Many of the Caribbean leaders are friendly to the US, and they must produce positive results in this "window", or political reversals and political change is likely to occur.

Nobody can deny that there are problems in El Salvador and Guatemala. The governments are not perfect democracies. There are excesses in the military, there is social injustice and excess concentration of wealth. The solution is not, however, to throw the baby out with the bath water and bring in a Sandinista-type government or even anything close, and this is where the frustration lies.

According to R. Bruce Cuthbertson, Regional Vice-President for Central America, Association of American Chambers of Commerce in Latin America, businessmen who supported the ouster of Somoza in Nicaragua have seen the Sandinistas replace him with a Marxist-Leninist dictatorship. The Sandinistas negotiate in bad faith. Many businessmen have been jailed for disagreement in business disputes. Others have simply and ruthlessly killed. In all this, the hypocrisy and cynicism of their rhetoric and the coldly calculated effectiveness of their means, the Sandinistas, as well as other guerilla groups in Central America, have only one objective: power. They mean to obtain it and to hold on to it by whatever means necessary. [Ibid]

Other members of the Caribbean wonder who is next in this onslaught of personal freedoms. The answer to this question will determine if there is development or not, investment or not, withdrawal or not, and will determine the success of the CBI and with it the future security of the United States.

C. SPECIFICATIONS OF THE MODEL

There are two courses of action generally considered as options by which vitality can be restored to the Jamaican economy. The first method involves stimulation of those elements of domestic industry which will expand export production. This is generally recognized as one of the primary focuses of the Caribbean Basin Initiative. The second and often proposed alternative, affords Jamaica easier access to foreign capital and encourages a marked increase in external debt. Undoubtedly the means by which either of these policies is implemented could be effectual upon the result. However, the method by which the basic policy is enacted is beyond the scope of this model. The model merely postulates projected values predicated upon a range of economic forecasts. Endeavoring to determine optimum policy we have proceeded under the basic assumption that these approaches are so radically different, that given a range of economic projections one method could be shown preferential to the other. The approach has been to segment the economy into separate

TAE X
JAMAICA: MACROECONOMIC FORECASTING MODEL

(Millions of 1980 Jamaica Dollars;
Stochastic Equation)

- (1) Private Consumption (PCNP) = $0.30 \text{ GDPPL} + 1.45 \text{ GCNP} - 0.39 \text{ DEBT} + 1 \quad 7.43$
(2.54) (2.55) (-3.46) (-1.18)
- (2) Government Consumption (GCNP) = $0.22 \text{ GDPPL} + 0.29 \text{ DEBTFP} + 0.06 \text{ BOJGCP} - 270.56$
(13.47) (3.66) (2.67) (-5.30)
- (3) Private Investment (IPP) = $0.06 \text{ GDPPL} - 0.04 \text{ DEBTFP} + 358.63$
(4.80) (-2.91) (-3.21)
- (4) Government Investment (IGP) = $0.24 \text{ DEBTFP} + 0.053 \text{ BOJGCP} + 51.53$
(5.10) (2.00) (0.26)
- (5) Imports (ZNP) = $1.00 \text{ EP} + 0.23 \text{ GCNP} + 3.91$
(14.93) (2.07) (0.07)
- (6) Exports (EP) = $1.14 \text{ USYP} - 1087.95$
(5.98) (-2.04)
- (7) Domestic Debt (DEBTP) = $0.94 \text{ DEBTPL} - 0.64 \text{ EP} + 1.28 \text{ GCNP} + 570.70$
(3.42) (-3.51) (2.73) (-0.04)
- (8) Money Supply (M1) = $0.357 \text{ DEBTFP} + 0.135 \text{ BOJGCP} + 0.152 \text{ GCNP} - 29.95$
(2.33) (2.80) (3.27)
- (9) Consumer Price Index (CPI) = $0.66 \text{ CPIL} + 0.00062 \text{ MIL} + .01$
(7.12) (6.75)
- Exogenous Variables
- (10) Bank of Jamaica Nominal Credit to the Government (BOJGCG)
- (11) Exports (EP)
- (12) Dollar Dominated Public Debt (DEBTFP)
- (13) Net Factor Payments (NEFPNP)
- (14) Change in Stocks (CSNP)
- Transformed Variables
- (15) Real Bank of Jamaica Credit to the Public Sector (BOJGCP) = BOJGCG/CPI
- Identities
- (16) National Savings (SNP) = Gross National Product (GNP) - Private Consumption (PCNP) - Government Consumption (GCNP)
- (17) Gross National Products (GNP) = Gross Domestic Product - Net Factor Payments (NEFPNP)
- (18) Gross Domestic Product (GDP) = Private Consumption (PCNP) + Government Consumption (GCNP) + Private Investment (PCNP) + Government Investment (IGP) + Change in Stocks (CSNP) + Exports (EP) - Imports (ZNP)

variables as illustrated in Table XX and then observe their response after a variety of economic occurrences were introduced.

The assumptions upon which this model is based proceeds from a series of nine behavioral equations. The intent being to focus on the broader aspects of the Jamaican economy, while acknowledging that greater specificity may yield marginally different results. This model is similar to the one discussed in chapter one, and depicts an economy that is:

1. Relatively small in comparison to the world;
2. Amiable to international trade and financial flows;
3. Assumes an exchange rate which is pegged or externally determined, and
4. That there is a rudimentary financial sector. The implication being that there is a limited capability to substitute financial assets for monetary holdings, and that interest rates on those resources are governmentally controlled.

The equations in the model are subject to random variations and explain private and government consumption and investment, as well as imports, exports, domestic debt, the money supply and finally the consumer price index.

1. Private Consumption and Investment

The difficulties of accurately incorporating consumer durables in measuring private consumption are generally accepted. Consequently our behavioral equation specifies that Real Private Consumption (PCNP) is positively related to both Gross Domestic Production (GDPNPL) and Government

Consumption (GCNP). While, it is negatively associated with domestic debt (DEBTP), or more specifically;

$$(30) \quad PCNP = b_1 GDPNPL + b_2 GCNP - b_3 DEBTP + b_4$$

where;

$$b_1 = 0.306$$

$$b_2 = 1.450$$

$$b_3 = 0.390$$

$$b_4 = 1347.43$$

$$r^2 = 0.9, D.W. = 1.82, F = 54.15$$

Private Investment (IPP) is commonly described as the flow of expenditures devoted to increasing real growth stock. In this equation, private investment is enhanced by changes in real Gross Domestic Product (GDPNPL) and adversely by elements of domestic debt (DEBTP). Clearly, there are other influences upon private investment, particularly such things as investment climate, inflationary expectations, and the inflow of foreign capital. However, in this equation, private investment is specified as;

$$(31) \quad IPP = b_5 GDPNPL - b_6 DEBT + b_7$$

where;

$$b_5 = .066 \quad r^2 = .55$$

$$b_6 = .040 \quad D.W. = 2.86$$

$$b_7 = 358.63 \quad F = 11.64$$

2. Government Consumption and Investment

Government consumption (GCNP) is identified as being positively related to Gross Domestic Product (GDPNPL) and

Dolar Dominated Public Debt (DEBTFP). It has a negative correlation with Bank of Jamaica's Credit to the Government (BOJCGPL). Specifically stated:

$$\begin{aligned}
 (32) \quad GCNP &= b_8 GDPNPL + b_9 DEBTFP + b_{10} BOJCGPL - b_{11} \\
 b_8 &= .22 & r^2 &= .946 \\
 b_9 &= .28 & D.W. &= 2.35 \\
 b_{10} &= .06 & F &= 106.25 \\
 b_{11} &= 470.56
 \end{aligned}$$

Although real government expenditures were considered as exogenous in the model simulation in chapter one, they have been noted as playing an important part in determining the equilibrium level of national income. In estimating an equation to reflect government investment (IGP) it is assumed a positive correlation with dollar dominated public debt and Bank of Jamaica credit to the government or;

$$(33) \quad IGP = b_{12} DEBTP + b_{13} BOJCGP + b_{14}$$

where;

$$\begin{aligned}
 b_{12} &= .24 & r^2 &= .550 \\
 b_{13} &= .058 & D.W. &= 2.86 \\
 b_{14} &= 51.59 & F &= 11.64
 \end{aligned}$$

3. Import and Exports

The balance of exports over imports is a crucial aspect of any island economy. In order to stimulate economic growth, Jamaica needs to provide the world market with sufficient quantities of goods, services, or raw materials to

offset those costs incurred from imports. One of the primary purposes of the President's Caribbean Basin Initiative, is to stimulate the export sector of these economies, and thereby favorably alter this balance. In adapting equations to reflect imports (ZNP) it is assumed that imports are related to both exports (EP) and government consumption (GCNP).

$$(34) \quad ZNP = b_{15}EP + b_{16}GCNP + b_{17}$$

Where;

$$\begin{array}{ll} b_{15} = 1.0 & r^2 = .963 \\ b_{16} = .23 & D.W. = 2.71 \\ b_{17} = 3.91 & F = 351.55 \end{array}$$

Exports (EP) on the other hand were modeled in the following manner.

$$(35) \quad EP = b_{18}USYP - b_{19}$$

Where;

$$\begin{array}{ll} b_{18} = 1.14 & r^2 = .923 \\ b_{19} = 1037.95 & D.W. = 2.07 \\ & F = 107.43 \end{array}$$

4. Domestic Debt

There is an important correlation, in any developing country, between the supply of money and that governments fiscal operations. The supply of money being a finite source from which both the government and private sectors compete. This relationship if allowed to develop to too severe an imbalance could retard future growth. In forecasting growth potential it is imperative to consider the current status of

that country's domestic debt. In the behavioral equation, domestic debt is negatively influenced by exports and positively affected by both debt and government consumption, that is:

$$(36) \quad \text{DEBTP} = b_{20}\text{DEBTPL} - b_{21}\text{EP} + b_{22}\text{GCNP} + b_{23}$$

where;

$$\begin{array}{ll} b_{20} = .94 & r^2 = .905 \\ b_{21} = .64 & \text{D.W.} = 2.10 \\ b_{22} = 1.28 & F = 67.91 \\ b_{23} = 570.7 & \end{array}$$

5. Money Supply

The money supply is generally assumed to mean the amount of money in an economy. The normal definition is segmented into three parts M1, M2, and M3. M1 generally refers to currency plus demand deposit; while M2 is used to describe M1 plus time and savings deposits at commercial banks; and M3 is M2 plus deposits at non-bank thrift institutions. When used in the Model Money Supply (MI) is positively associated with dollar dominated public debt, Bank of Jamaica nominal credit to the Government, and Government consumption. That is:

$$(37) \quad \text{MI} = b_{24}\text{DEBTFP} + b_{25}\text{BOJCG} + b_{26}\text{GCNP} - b_{27}$$

Where:

$$\begin{array}{ll} b_{24} = .357 & r^2 = .981 \\ b_{25} = .135 & \text{D.W.} = 2.26 \\ b_{26} = .152 & F = 316.01 \\ b_{27} = -29.95 & \end{array}$$

6. Consumer Price Index

The consumer price index is an effective measurement when used in determining relative changes in the prices of specified consumer goods. On the consumer level, it reflects the real domestic value of the dollar. In the behavioral equation it is defined as being determined by both money supply (MI) and historical (lagged one year) reference to last years consumer price index (CPIL). Stated in terms of the equation:

$$(38) \quad CPI = b_{28}CPIL + b_{29}MIL + b_{30}$$

Where;

$$\begin{array}{ll} b_{28} = .66 & r^2 = .993 \\ b_{29} = .0006 & D.W. = 2.00 \\ b_{30} = .01 & F = 1932.79 \end{array}$$

D. RESULTS

In trying to decide upon the optimum policy for Jamaica, six areas were established for which the results are to be judged. The criteria established that the best policy would be one which increased GNP, savings, and exports, while decreasing domestic debt, external debt and held the consumer price index below 10%. This chapter contains eight different computer simulations, each with four subroutines. These subroutines vary the export rate of growth from 2 to 8% in 2% increments. The first simulation had Bank of Jamaica Credit to Government increased at 15% per annum while external debt

was held constant at the 1982 value, (Table XXI). Only two options appeared as potentially capable of satisfying the prescribed criteria, that of achieving either a 6% or and 8% rate of export growth. A 6% increase in the export growth rate would be acceptable if it were not for the .2% decrease in the rate of private consumption. However, at an 8% export rate of growth the forecast complies with all the established goals, and maintains a consumer price index (a measure of inflation) below 10%. This simulation appears to be the optimal selection and best satisfies the judgement criteria.

The second simulation maintains Bank of Jamaica credit to the government at 15% per annum, but the external debt has been increased at the rate of 5% annually (Table XXI). Again, as rate of export growth increases the macrovariables appear to be nearly optimal at the 6% rate. Closer observation reveals an adverse affect, namely inflation ranging from 10.4% to 10.7%. Therefore, this simulation does not fit the mold as a successful policy option.

The third simulation is with BOJ credit to government increased to 25% annually with external debt held at the 1982 value (Table XXII). In this scenario, the macrovariables begin to look promising as low as the 4% rate of export growth and very healthy at the 6% level. However, inflation values at the 12.6% level remove this choice as a viable option for the policy maker.

TABLE XXI

JAMAICA: OPTIMAL CONTROL MACROECONOMIC FORECASTS, 1983-1990
BANK OF JAMAICA CREDIT TO GOVERNMENT - INCREASED AT 15% PER ANNUM

Millions of 1980 Jamaican Dollars

	1982 Values	Rate of Export Growth (Annual Average)			Rate of Export Growth		
		2%	6%	8%	Historical Pattern	6%	8%
Macrovariable							
Gross National Product	4469.2	3218.2	4928.2	5904.7	4730.8	5415.0	6392.6
Private Consumption	3253.9	1856.8	3212.7	3989.5	2809.4	3345.6	4122.9
Private Investment	459.6	382.9	464.7	5951.2	369.5	504.4	581.7
Private Expenditures	3713.5	2239.8	3141.9	4584.6	2358.0	3850.0	4704.7
Government Consumption	1080.2	888.0	1174.8	1334.8	1174.2	1461.8	1622.2
Government Investment	500.7	551.3	550.7	548.9	697.4	696.2	695.6
Government Expenditures	1580.9	1439.4	1601.2	1883.8	1871.6	2158.0	2317.8
Savings	135.1	473.3	517.0	580.4	540.2	607.7	647.5
Domestic - External Gap	-825.2	-461.1	-498.5	-527.1	-563.9	-593.1	-630.0
Domestic Debt	2956.4	4731.7	3338.4	2505.6	5874.4	4476.1	3643.8
BOJ Credit to Government	1860.9	2937.1	2917.6	2873.2	2578.3	2546.0	2528.9
External Debt	1422.4	1422.4	1422.4	1422.4	2101.6	2101.6	2101.6
Consumer Price Index	1.20	2.53	2.34	2.38	2.65	2.68	2.70
Average Annual Rate of Growth (1982-1990)							
Gross National Product	-	-4.0	1.2	3.5	-2.3	2.4	4.6
Private Consumption	-	-6.7	-0.2	2.6	-6.0	0.3	3.0
Private Investment	-	-2.3	0.1	1.5	-2.7	1.2	3.0
Private Expenditures	-	-6.1	0.1	2.7	-5.5	0.5	3.0
Government Consumption	-	-2.4	-0.3	1.1	1.0	3.9	5.2
Government Investment	-	1.2	1.2	1.2	4.2	4.2	4.2
Government Expenditures	-	-1.2	0.2	1.1	2.1	4.0	4.9
Savings	-	17.0	18.3	20.0	18.9	20.7	21.7
Domestic - External Gap	-	7.0	5.4	4.6	5.4	4.0	3.3
Domestic Debt	-	6.1	1.5	-2.0	9.0	5.3	2.6
BOJ Credit to Government	-	5.9	5.7	5.6	4.2	4.1	3.9
External Debt	-	0.0	0.0	0.0	5.0	5.0	5.0
Consumer Price Index	-	8.6	8.8	8.9	10.4	10.6	10.7
Percentages							
Private Consumption/Gap	72.8	57.7	66.9	67.6	53.7	61.8	64.5
Private Expenditures/Gap	83.1	69.6	78.5	77.6	63.7	71.1	73.6
Government Expenditures/Gap	35.4	44.7	40.0	31.9	50.5	56.1	36.3
Government Expenditures/Private Expenditures	42.6	64.3	51.0	41.1	79.4	62.4	49.3

TABLE XXII
JAMAICA: OPTIMAL CONTROL MACROECONOMIC FORECASTS, 1983-1990
BANK OF JAMAICA CREDIT TO GOVERNMENT - INCREASED AT 25% PER ANNUM

(Millions of 1980 Jamaican Dollars)	Rate of Export Growth (Annual Average)				Rate of Export Growth		
	Historical		Pattern	2%	Historical		Pattern
	2%	6%			2%	6%	
Macrovariable							
Gross National Product	3453.9	4489.9	5172.5	6148.2	3934.2	4961.0	5644
Private Consumption	1928.3	2748.4	3283.5	4059.9	2053.9	2874.4	3410.2
Private Investment	376.9	458.6	511.8	589.1	363.4	445.1	498.3
Private Expenditures	2305.3	3207.1	3795.3	4649.0	2417.3	3319.6	3908.5
Government Consumption	1030.3	1192.5	1316.5	1476.2	1309.9	1472.4	1596.9
Government Investment	622.0	621.4	620.3	619.3	765.0	764.4	1757.0
Government Expenditures	1652.3	1813.8	1936.8	2095.6	2074.9	2236.8	762.7
Savings	505.3	549.0	572.5	612.1	570.4	614.2	2519.7
Domestic - External Gap	-493.8	-531.2	-559.7	-596.4	-558.1	-587.1	677.5
Domestic Debt	5288.4	4360.1	3888.2	3055.0	6404.8	5471.7	-661.0
BOJ Credit to Government	4327.9	4306.2	4281.3	4256.5	3917.1	3899.2	4172.7
External Debt	1422.4	1422.4	1422.4	1422.4	2101.6	2101.6	3858.4
Consumer Price Index	3.08	3.09	3.11	3.13	3.40	3.43	2101.6
Average Annual Rate of Growth (1982-1990)							3.45
Gross National Product	-3.1	0.1	1.8	4.1	-1.6	1.3	5.0
Private Consumption	-6.3	-2.1	0.1	2.8	-5.6	-1.5	3.2
Private Investment	-2.4	0.0	1.4	3.2	-2.9	-0.4	2.9
Private Expenditures	-5.8	-0.2	1.9	4.6	-5.2	-1.4	3.2
Government Consumption	-0.6	1.2	2.5	4.0	2.4	3.9	6.3
Government Investment	2.7	2.7	2.7	2.7	5.4	5.4	5.4
Government Expenditures	0.6	7.7	2.6	3.6	3.5	4.4	6.0
Savings	17.9	19.2	19.8	20.8	19.7	20.9	22.3
Domestic - External Gap	6.2	5.4	4.7	4.0	4.8	4.2	2.7
Domestic Debt	7.5	5.0	3.5	0.4	10.1	8.0	4.4
BOJ Credit to Government	11.1	11.1	11.0	10.9	9.8	9.7	9.5
External Debt	0.0	0.0	0.0	0.0	5.0	5.0	5.0
Consumer Price Index	12.5	12.6	12.6	12.7	13.9	14.0	14.1
Percentages							
Private Consumption/GNP	55.7	61.2	63.5	66.0	52.2	57.9	63.2
Private Expenditures/GNP	66.6	71.4	73.4	75.6	61.4	66.9	71.9
Government Expenditures/GNP	47.7	40.4	37.4	34.1	52.7	45.1	38.1
Government Expenditures/Private Expenditures	71.7	56.6	51.0	45.1	85.8	67.4	52.9

The fourth simulation is with BOJ credit to the government at 25%, but external debt increased at 5% per annum (Table XXII). Here too, inflation becomes the negating variable, ranging from 13.9% to 14.1%.

The fifth and sixth simulations are with BOJ credit to the government at 35% annually (Table XXIII). In both cases where external debt is held constant at the 1982 value, and the external debt increased at 5% per annum, inflation was abhorrently high, ranging from 17.0 to 18.2%. Neither case can be considered a plausible alternative.

The seventh and eighth simulations were with Government external debt decreasing at 2.5% per annum (Table XXIV). Inflation is double digit at all levels of export growth causing the rejection of these alternatives.

E. SUMMARY

In summation of this macroeconomic modeling, there is one viable policy option which satisfies all the proposed criteria. This is simulation number one (Table XXI), where all the macrovariables maintain the desired levels and should serve to restore Jamaica's economic vitality. Moreover, inflation is predicted not to exceed 8.9%, while domestic debt will be decreased by 2% and GNP is increasing at 3.5%. The other seven computer simulations seem to embody one more adverse characteristic that removes them from consideration. Since most alternative policy options were eliminated based upon

TABLE XXIII
JAMAICA: OPTIMAL CONTROL MACROECONOMIC FORECASTS, 1983-1990
BANK OF JAMAICA CREDIT TO GOVERNMENT - INCREASED AT 35% PER ANNUM

(Millions of 1980 Jamaican Dollars)	Rate of Export Growth (Annual Growth)				Rate of Export Growth			
	Historical Pattern		Historical Pattern		Historical Pattern		Historical Pattern	
	2%	6%	8%	2%	6%	8%	2%	6%
Macrovariable								
Gross National Product	3744.5	4770.4	5452.9	6428.4	4211.4	5074.8	5921.4	6897.7
Private Consumption	2831.2	3366.8	4143.0	4143.0	2137.2	2957.6	3493.2	4269.9
Private Investment	370.8	452.5	505.6	582.9	357.3	439.0	4921.8	569.4
Private Expenditures	2382.4	3284.2	3872.4	4725.9	2494.5	3396.7	3985.4	4839.4
Government Consumption	1190.8	1352.9	1476.9	1636.5	1467.9	1630.3	1754.0	1914.6
Government Investment	701.9	701.3	700.1	699.1	843.4	842.7	841.0	840.9
Government Expenditures	1892.7	2054.1	2177.0	2335.6	2311.3	2473.0	2596.7	2755.4
Savings	542.2	585.8	609.3	648.9	606.3	650.0	688.0	713.2
Domestic - External Gap	-530.7	-568.0	-596.6	-633.3	-594.5	-631.9	-673.2	-697.3
Domestic Debt	5911.7	4983.3	4510.9	3677.3	7011.6	6081.3	5611.6	4778.4
BOJ Credit to Government	5856.2	5834.7	5809.9	5781.5	5440.1	5421.5	5400.1	5378.8
External Debt	1422.4	1422.4	1422.4	1422.4	2101.6	2101.6	2101.6	2101.6
Consumer Price Index	4.21	4.22	4.24	4.26	4.53	4.54	4.57	4.58
Average Annual Rate of Growth (1982-1990)								
Gross National Product	-2.2	0.8	2.5	4.6	-0.7	1.6	3.6	5.6
Private Consumption	-5.8	-1.7	0.4	3.1	-5.1	-1.2	0.9	3.5
Private Investment	-2.6	-0.2	1.2	3.0	-3.1	-0.6	0.9	2.7
Private Expenditures	-5.4	-1.5	0.5	3.1	-4.9	-1.1	0.5	3.1
Government Consumption	1.2	2.9	4.0	5.3	3.9	5.3	6.3	7.4
Government Investment	4.3	4.3	4.3	4.3	6.7	6.7	6.7	6.7
Government Expenditures	2.3	3.3	4.1	5.0	10.0	10.9	11.6	12.4
Savings	19.0	20.1	20.7	21.7	20.7	21.7	22.6	23.1
Domestic - External Gap	-5.4	-4.6	-4.0	-3.3	4.0	3.3	2.5	2.1
Domestic Debt	9.0	6.7	5.4	2.8	11.4	9.4	8.3	6.2
BOJ Credit to Government	15.4	15.4	15.3	15.2	14.3	14.3	14.2	14.2
External Debt	0.0	0.0	0.0	0.0	5.0	5.0	5.0	5.0
Consumer Price Index	17.0	17.0	17.1	17.2	18.1	18.1	18.2	18.2
Percentages								
Private Consumption/GNP	53.7	59.3	61.7	64.4	50.7	58.3	59.0	61.9
Private Expenditures/GNP	63.6	68.8	71.0	73.5	59.2	66.9	67.3	70.2
Government Expenditures/GNP	50.5	43.1	39.9	36.3	54.9	48.7	43.8	39.9
Government Expenditures/Private Expenditures	79.4	62.5	56.2	49.4	92.6	72.8	65.1	56.9

TABLE XXIV

JAMAICA: OPTIMAL CONTROL MACROECONOMIC FORECASTS, 1983-1990
GOVERNMENT EXTERNAL DEBT REDUCED AT 2.5% PER ANNUM

(Millions of 1980 Jamaican Dollars)	Rate of Export Growth (Annual Growth)											
	Historical						Historical					
	2%	6%	8%	2%	6%	8%	2%	6%	8%	2%	6%	8%
Macrovariable												
Gross National Product	3602.6	4628.2	6285.3	5310.7	6285.3	3322.2	4347.8	5029.9	6005.0			
Private Consumption	1992.4	2812.2	4125.2	3347.1	4125.2	1910.1	2729.9	3264.8	4040.8			
Private Investment	378.6	460.3	590.6	513.4	590.6	384.8	466.6	519.6	597.9			
Private Expenditures	2371.0	3272.5	4713.9	3860.5	4713.9	2295.0	3196.5	3784.4	4637.8			
Government Consumption	1089.2	1251.3	1534.5	1375.1	1534.5	928.3	1090.3	1214.1	1373.6			
Government Investment	649.7	648.9	646.6	647.6	646.6	569.3	568.5	567.3	-66.3			
Government Expenditures	1738.9	1900.2	2181.2	2022.7	2181.2	1497.6	1658.8	1781.5	1940.0			
Savings	521.0	564.7	627.6	588.0	627.6	483.9	527.6	551.0	590.6			
Domestic - External Gap	-507.4	-544.7	-609.8	-573.2	-609.8	-470.4	-507.6	-536.1	-572.8			
Domestic Debt	5443.9	4515.3	3208.8	4042.6	3208.8	4811.3	3884.7	3412.5	2579.0			
BOJ Credit to Government	6047.8	6024.9	5972.3	5998.5	5972.3	4524.6	4500.9	4473.6	4446.6			
External Debt	1161.6	1161.6	1161.6	1161.6	1161.6	1161.6	1161.6	1161.6	1161.6			
Consumer Price Index	4.08	4.09	4.13	4.11	4.13	2.94	2.95	2.97	3.00			
Average Annual Rate of Growth (1982-1990)												
Gross National Product	-2.7	0.4	4.4	2.2	4.4	-3.6	-0.3	1.5	3.8			
Private Consumption	-5.9	-1.8	4.8	0.4	4.8	-6.4	-2.2	0.0	2.7			
Private Investment	-2.4	0.0	3.2	1.4	3.2	-2.2	0.2	1.5	3.3			
Private Expenditures	-5.5	-1.6	3.0	0.5	3.0	-5.8	-0.2	0.2	2.8			
Government Consumption	0.1	1.9	4.5	3.1	4.5	-1.9	0.1	1.5	3.0			
Government Investment	3.3	3.3	3.3	3.3	3.3	1.6	1.6	1.6	1.5			
Government Expenditures	1.2	2.3	4.1	3.1	4.1	-0.7	0.6	1.5	2.6			
Savings	18.4	19.6	21.2	20.2	21.2	17.3	18.6	19.2	20.3			
Domestic - External Gap	5.9	5.1	3.7	4.4	3.7	6.8	5.9	5.2	4.5			
Domestic Debt	7.9	5.4	1.0	4.0	1.0	6.3	3.5	1.8	-1.7			
BOJ Credit to Government	15.9	15.8	15.7	15.8	15.7	11.6	11.7	11.6	11.5			
External Debt	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5			
Consumer Price Index	16.5	16.6	16.7	16.6	16.7	11.9	11.9	12.0	12.1			
Percentages												
Private Consumption/GNP	55.3	60.8	65.6	63.0	65.6	57.5	62.8	64.9	67.3			
Private Expenditures/GNP	65.8	70.7	75.0	72.7	75.0	69.1	73.5	75.2	77.2			
Government Expenditures/GNP	48.3	41.1	38.1	38.1	34.7	45.1	38.2	35.4	32.3			
Government Expenditures/Private Expenditures	73.3	58.1	46.3	52.4	46.3	65.3	51.9	47.1	41.8			

unacceptable inflationary values, significant changes to these underlying inflationary pressures might necessitate a reevaluation.

After completing the analysis of these simulations, it appears the CBI's legislation provides one of the best possible options for America to pursue in order to aid Jamaica and hopefully other Caribbean nations. Clearly the approach adopted by Michael Manley was wrought with difficulties and was an economic catastrophe for Jamaica. For the future, many questions remain about the present government and whether Seaga's approach will provide viable solutions to Jamaica's economic ills. More specifically, can the people of Jamaica accommodate a policy which, as this chapter recommends, attains an export growth rate of 8%? The answer to this question necessarily rests, at least in part, within the Jamaican culture. That is, do the Jamaicans possess the type of national character which will sustain the necessary motivation and drive to achieve this goal, or rather, will they succumb to circumstance and remain an impoverished nation. These questions are issues which will be explored in the following chapter.

III. CULTURE

Before addressing specific questions about Jamaican culture, or any culture for that matter, it is necessary to develop an appreciation for some of the more significant influences which contributed in the formation of that particular culture. History is unquestionably among the important forces acting upon both cultural development and national character. For that reason this chapter recapitulates Jamaican history, with particular emphasis upon those events which have had a lasting influence. The final portion of the chapter identifies some distinguishing societal characteristics which can be identified in the composition of the national character.

The most important dictates governing economic development reside within that country's people. That is not to say the natural resources, plant facilities, capital availability, or any of the countless factors of production are without significant influence, for they are important. It is however, ultimately a country's people which will in large measure determine their future economic viability.

Just as parents deliver to their children a unique set of genetic programming produced with the particular interaction of their RNA and DNA genetic contributions, each country brings to its people a distinct cultural heritage.

The factors which compose this unique heritage are forged by peculiarities determined within both their culture and their history. Since all countries necessarily possess dissimilar histories, they likewise possess many unusual cultural idiosyncrasies. This seemingly obvious fact, too often goes unnoticed when trying to adapt solutions to the economically distressed countries of the world. The island country of Jamaica is no exception.

Historically, Jamaica was first a part of the Spanish empire having been discovered by Columbus on May 5, 1494. The original inhabitants, Arawak Indians, were virtually exterminated during the 150 years of Spanish rule. Jamaica's main role during this era was as a food producing center in support of Spanish settlements and military bases elsewhere in the new world. As the other Spanish colonies became more self sufficient, the importance of Jamaica as an agricultural center diminished. Spain's control over Jamaica ended in May of 1655 with the arrival of a British expeditionary force. Which, after an unsuccessful attack upon the Spanish forces in Hispaniola, decided upon Jamaica as an alternate target. The result was successful and by 1660 the last of the occupying Spanish forces were expelled.

Jamaica remained under British rule until they obtained their independence in 1962. During the early years of British rule Jamaica was used increasingly as a base from which pillaging attacks on Cuba and other Spanish territories

were conducted. This was common practice during the seventeenth century, as trade rivalry between the English, Spanish, French and Dutch competed for a larger share of new world wealth. This competition encouraged buccaneering as each of the European powers sought to expand both their treasury and influences. The town of Port Royal in Jamaica became one of the primary center's from which Buccaneer's carried out raids upon both Spanish and Dutch possessions. These buccaneering exploits reached their zenith under the legendary exploits of the notorious pirate Henry Morgan. His successes earned both recognition and acclaim for which he received an English knighthood and was subsequently appointed as Governor of The Island of Jamaica.

As British influence became more dominant in the region their policies shifted toward preservation of the status quo. This change in emphasis caused a realignment of the Jamaican economy and fostered a renewed growth in the agriculture sector. The foundation of this newly formed agricultural economy centered upon large landholding estates. For only then could the agricultural technology of the day produce sufficient quantities of foodstuffs to be competitive in the world market. These methods tended to be highly labor intensive and generally required single crop specialization. Jamaica was successful and became the largest English, and for a period of time the largest world producer of sugar. With the alteration in the economy, new demands for a cheap

labor source emerged. The solution to this need for cheap manpower was found with the development of slavery. When the subjugation and exploitation of the less technically advanced peoples of the world proved profitable great fortunes were amassed through slavery. The majority of the slave trade originated from Africa.

The early population of Jamaica consisted mostly of black slaves, white male overseers, attorneys and auxillary personnel. Early estates were often administered by the white overseers who, likely as not, managed the estate for absentee landlords. Landowners tended for the most part to reside in England, and hence the overseerer was given virtual Carte Blanche over the administration of the estate. The primary concern of the owner was no doubt centered on the estates profitability. The result of this type of colonial structure tended to favor a short run maximization of output with little or no regard for long term consequences.

In the year 1722 the Jamaican population was comprised of the following percentages and numbers of people;

WHITES	9%	7,920
FREE COLOREDS	<1%	660
BLACKS	89%	78,320

TOTAL POP		86,900

By 1800, the free colored population had increased nearly three-fold.

WHITES	10%	34,000
FREE COLOREDS	3%	10,200
BLACKS	88%	299,200

TOTAL POP		343,400

The free colored population continued to rise and by the year 1844 they commanded a full 18% of the Jamaican population. [Ref. 66] This dramatic rise in the ratio of free colored was caused primarily by some unusual circumstances which prevailed in both Jamaica, and other British colonies in the West Indies. The estate managers were invariably either single or if married were living seperately from their family. Usually the families were left in England while the husband or father went off to the colonies to fulfill his contract. The outgrowth of this type of colonial structure gave rise to practices which often made concubines of the younger prettier female slaves, and resulted in the rapid growth of the mulatto population.

The offspring of these relationships tended to enjoy greater privilege and social standing than their blacker brothers. These circumstances tended to promote a laddered social structure among the indigenous blacks. The color and tone of one's skin determined where or what rung of the social ladder one belonged (i.e. the lighter the skin the higher ones social status). These children of mixed blood, were often treated more preferentially and were more likely to be given

their freedom. Even today the free colored population of the West Indies have been described as "an inbred group whose values are expressed in genteel etiquette and status-giving possessions." [Ref. 67] The absence of the white female from the family unit in colonial Jamaica introduced a cultural influence that survives to this day.

Equally important, but somewhat less tangibly measured, were the contributions to Jamaican culture which stemmed from the attitudes and actions on the part of the overseerer. Who, as a consequence of his separation from his family, tended to view Jamaica only as a place of employment rather than his home. The policies and methods of operation for most of the estates tended to reflect similar values and therefore adopted similar practices. Most of which emphasized short term profits with little thought of the associated long term costs. The majority of Jamaicans shared this cultural heritage since most of the black populace were tied to the plantation system and were thus effected.

Although, for the most part blacks who comprised the slaves of colonial Jamaica and those residing in America originated from similar tribes and geographic areas in Africa, they were exposed to two very dissimilar environments. The African culture was much more predominant among slaves in the West Indies as it was continually being infused and refreshed with the African cultures. This served to continually remind the indigenous cultures of their African

heritage, and represented a marked difference from the experiences of those blacks which were destined for America.

The West Indies were often a stopping point for slaves enroute to America and other locations. Slaves were frequently sent to Caribbean plantations prior to being transported to America or other world markets. They were kept in these locales until they developed familiarities with the western language, culture, and developed sufficient biological immunities. The staging of slaves in the Caribbean had profound effects, in both the long and short term.

In the short term, these recent transplants had much higher mortality rates, since they had not developed immunization to local diseases. They were also subject to much harsher treatment since it was more costly to maintain slaves than to replace them. This factor more than others was mostly responsible for the higher mortality rates among Caribbean blacks. The West Indian blacks also had to be much more self-sufficient, as he couldn't allow for the degree of labor specialization afforded his kinsman in America. The plantations were required to produce their own foodstuffs since the economies of the time didn't create the necessary markets to yield an agricultural base designed to support the local population. This circumstance was particular to the West Indies, and from its inception developed a greater sense of black independence and fostered a certain enterprising spirit among the early blacks. By contrast the American black was

. completely dependent on the system for his sustenance. This fact is simply verified by the persistent uprisings which were so common among the early Caribbean states. The separate independence offered the Jamaicans of the "COCKPIT COUNTRY" attests to its presence in Jamaica.

Further analysis of the Jamaican national character as presented in the remainder of this chapter is based upon the premises of "basic personality" as developed by Dr. Abram Kardiner and Dr. Ralph Linton. According to Dr. Linton the concept of "basic personality" depends upon the following point:

1. That the individual's early experiences exert lasting effect upon his personality, especially upon the development of this projective systems.
2. That similar experiences will tend to produce similar personality configurations in the individuals who are subjected to them.
3. That the techniques which the members of any society employ in the care and rearing of children are culturally patterned and will tend to be similar, although never identical, for various families within the society.
4. That the culturally patterned techniques for the care and rearing of children differ from one society to another.

If these postulates are correct, and they seem to be supported by a wealth of historical evidence, it follows:

1. That the members of any given society will have many elements of early experience in common.
2. That as a result of this they will have many elements of personality in common.

3. That since the early experience of individuals differs from one society to another, the personality norms for various societies will also differ.

The basic personality type for any society is that personality configuration which is shared by the bulk of the society's members as a result of the early experiences they have in common. [Ref. 68]

Clearly this is not meant to imply that the majority of the members of any society will behave or respond identically or even in a similar manner. Individual behavior is determined by a unique blend of personality traits and remembered responses to stimuli as presented by the environment. Consequently there is a wide range of expected behavioral and attitudinal responses from any group or individual within a particular society. Still it is useful to determine a 'basic personality type' even though it is recognized that very different behavior can occur from similar personality types. Dr. Linton says of the "basic personality type," that it does not correspond to the total personality but rather the projective system, or the value attitude systems which are basic to the individual personality configuration. [Ref. 69]

The basic personality type for any group can be defined in terms of the value orientations which were previously shared by a majority of the members of the group. If we project this supposition further and replace the "group" with a "society", then what emerges is a basic personality type for that society, which is synonymous with the term "national character".

The identification of a society's dominant value orientations with a basic personality type is discussed in Dr. Florence R. Kluckholm's book Dominant and Variant Value Orientations. There are two underlying beliefs upon which her theory rests; the first supposes that there is a "limited number of basic human problems for which all people at all times and in all places must find some solution," and the second assumes, "that the variability in solutions is within the realm of possibility".

The first premise arrives at five basic problems of key importance, which Dr. Kluckholm identifies as;

1. What are the innate predispositions of man? (Basic Human Nature)
2. What is the relation of man to nature?
3. What is the significant time dimension?
4. What is the valued personality type?
5. What is the dominant modality of the relationship of of man to other men? [Ref. 70]

The second premise just assumes that the solutions to the problems faced by mankind are solvable. The observations about commonly faced human problems will serve as a guide in discussing Jamaican society. The purpose of which will be to explore those elements of basic personality which compose the "national character" of Jamaica. By definition this endeavor will combine an array of personality types which transcend social, economic, and educational differences. That is to say, members of very different social sectors, by virtue of their nationality common value orientations.

Jamaicans tend to perceive human nature as a mixture of both good and bad. Most seem to believe that without laws to govern behavior the darker side of man's nature would prevail. Impulses to do wrong are resisted mainly because the individual fears the law, not because he is led to do right by his conscience or some other standards of conduct.

Curiously, while most Jamaican men are characteristically belligerent, they also exhibit many feminine traits. This phenomenon results mostly from an adolescence spent almost exclusively in the care and company of women. This peculiarity owes its origin to early patterns of sexual permissiveness which endure to this day.

Sexual permissiveness stems primarily from two beginnings, the first as a holdover from sexual norms practiced during the early slave days, and the second as a consequence of costs associated with a legal marriage ceremony. Most families with parents who have been ceremoniously wed in church are from the upper and middleclass. This occurs primarily because the costs associated with this type of ceremony is beyond the means of most Jamaicans. However, rather than forego an active sex life until middle age or until financially able, most Jamaicans prefer to ignore the costlier conventions of marriage.

The rarity of legal marriages, at least among the masses, does not mean that the people do not establish durable and lasting unions. Common-law marriages, or concubines may

persist for years before financial circumstances permit the expenses associated with a proper wedding. The result of this type of social occurrence fosters attitudes of sexual permissiveness on the part of the Jamaican male. They in turn serve to create a family environment in which the burden of rearing children rests primarily upon the female members of Jamaican society.

It has been widely noted that the dominant role women play in rearing male children, coupled with the lack of social stigma associated with sexual promiscuity has had dramatic effects on the character of the Jamaican male. That is to say the consequences of these social actions is to place females in the role of the authoritative family figure as well as giving an overall 'femine' character to Jamaican society. As noted by Morris Cargil:

That although the boy may, and usually does, grow up into a fine example of masculine physique, his attitude toward life is extraordinarily female--his logic is not male logic, his emotionalism tends to be a female emotionalism. In addition to this, as he grows up and develops the rejection of authority which is part of the normal process, he has no father - figure against whom to rebel. So his rebellion is against woman. Add to this that his environment has led him to accept the woman as the breadwinner, and you get a male who seldom quite ceases, subconsciously, to resent women, even when he loves them, and who has no particular feeling of responsibility towards them, in the sense that this is understood by the Western male.

The evolution of social values born during the slave era influences modern day values about the nature of work. It is a widely held opinion that the task or job in which one

is employed is a direct reflection upon his or her social status. Positions which involve manual or hands-on labor are uniformly viewed as less desirable than white collar positions regardless of pay. Ira Reid notes in his book The Negro Immigrant that "the West Indian black has had a long and distinct aversion for manual labor". The desire to be employed in a white collar position has caused many distortions in the work place. As evidenced by the growth in government bureaucracies, at a time when the country must often go abroad to impart needed technical expertise.

Jamaicans have a polychronic perception of time, that is they tend to focus primarily upon the past and the future. Consequently, interaction with foreigners, of culturally different backgrounds, often produce difficulties as they discover Jamaicans perceive and relate to time in a different manner than most people of western culture. The traditional Jamaican response to the question, when will the job be done, or when will an expected event occur is "soon come". Edward Hall in his book Beyond Culture, notes that cultural differences are often seen by the way in which that culture relates to time.

Hall describes a framework which can be used to help categorize most cultures. The method he uses identifies two extremes, one end is identified as low context while the other is referred to as high context, with each exhibiting certain unique traits. A low context culture is described

as one which, tends to be organized around systems, emphasizes linear concepts, holds reason and rationality in high regard, prefers definite and distinct answers, seems to deal with portions of the whole rather than the big picture, has a limited institutionalized memory and has a monochronic focus on time (emphasis on the present). The low context culture is characteristic of western cultures like the United States, Germany, and Sweden. The other end of the cultural spectrum is identified as a high context culture and is noted as having the following attributes: Tends to be organized around people, decisions are arrived at by consensus, individuals tend to identify themselves by their relation to the group, and time seems to be viewed in a polychronic manner, that is to say the past and the future are emphasized over the present. Countries like Russia, Argentina, and Japan are given as examples of a high context culture. Although Jamaica doesn't entirely fulfill all the criteria set forth, it does exhibit many of the traits Hall describes as characteristic of a high context culture.

In summation, Jamaica is a land whose people share a common heritage. That climate, geography and history played a major role in this formation seems undeniable. Furthermore, these same factors emerge in formation of a national character, the peculiarities of which have been noted in this chapter. In reiteration of some of the important elements of national character, western culture sees the Jamaicans as

a race who; originated from brutal beginnings, tends to have a feminine disposition, perceives women as an authoritative figure, has a general attitude of sexual permissiveness, that tends to regard work more in terms of status than function, and finally, has an appreciation of time that is characteristically 'high context'.

IV. CONCLUSIONS

In reiteration of the conclusions in chapter one, Prime Minister Manley's adjustments in economic policies for Government expenditures created massive deficits, high inflation and low domestic morale. It is evident that OPEC price increases did contribute negatively to much of Jamaica's economic problems. However, sound local economic policies could have reduced the impact of OPEC price hikes, a solution which eluded then Prime Minister Manley.

Chapter two provided computer simulations of eight different economic policy options. Simulation number one's results verify that the CBI does provide Jamaica with the necessary tools to escape from their dreary economic plight. But this is only true if they remain within the specified parameters of the model. So the bottom line question seems to be whether or not Jamaicans can obtain an 8% rate of export growth as determined by simulation number one (Table XXI). This will no doubt depend upon a variety of factors some of which have been considered in the course of this work, but others unfortunately, will be obvious only from a historical perspective. Nonetheless, those factors which have been addressed seem to indicate Jamaicans are not culturally restrained from attaining that level of productivity. In fact, the West Indian black has demonstrated a remarkable

ability to excel given the right circumstance. This can be seen by viewing their economic performance when allowed to immigrate to the United States. Consider for example, the following statistics. "In 1969, black West Indians in the United States earned 94% of the average income of America's total populace. Remarkably, the second generation West Indian earned 15% more than the average American. As further testament to their capabilities, more than 50% of all black owned business in New York State are owned by blacks of West Indian origin. Although it is recognized that qualifying for immigration to the United States may place an individual in an elite group among his countrymen. These statistics are clearly not symptomatic of a people incapable of being productive.

There are still several unknown factors which could serve to completely undermine these predictions and negate the CBI. These factors, originate from both internal and external sources. For the purposes of this discussion external factors will be considered to remain constant. While internal factors include such things as how accommodating the Jamaican government remains in the view of international finances. For example, a return to power of the PNP and Michael Manley would effectively negate the impetus for the inflow of western capital. The Jamaican political picture must remain stable from an investor's viewpoint and that generally means a government in power which is not hostile to western and

democratic ideals. In this light, the consequences of internal elections could serve to completely forestall any economic benefit the island would receive from the CBI.

Another internal variable of unpredictable consequence, is the degree the present Seaga regime is prepared to go in accommodating the inflow of free world capital. That is, will investors and investment be greeted favorably by the government, or will they encounter a plethora of red tape and government bureaucratic restrictions whose net result would be to deter further investment. The reciprocity of the Jamaican government to provide economic incentive to investors would no doubt have an escalating effect upon the entire economy. Conversely, any attempt to capitalize, on the part of the government, and extract additional revenues from the budding economic base would be extremely detrimental in the long run.

The solution to this problem may be found in a more rational approach, one in which, a profit-sharing or joint ownership arrangement develops. The concept being to reward both participants as productivity and profits rise. The corporation receives an additional incentive by way of the government now having a vested interest in the firm's future profitability. This may also serve to help remove the stigma that the multinationals or international investor was profiting at local expense. Additional economic incentives should be afforded those investing bodies or corporations

that develop training programs for local workers and employ Jamaican managerial talent. The governing concept here should be for the local institutes to develop programs that foster mutually beneficial growth while avoiding the preception that the enrichment of one is at the expense of the other.

One final internal factor bares mentioning, namely, how effectively the present Jamaican administration is at placating urban unrest. Finding solutions to these problems is both difficult and volatile. This point is perhaps best illustrated by the recent riots occurring in Kingston after the government announced increases in the price of gasoline. Although governmental response was rational and restrained, the publicity generated certainly has had an adverse effect on both the investment as well as the tourist community. Jamaica's urban problems are compounded by the high unemployment and the fact that over half of the population is under 20. To forestall similar future occurrences, government policy must not only find long term solutions to these problems, but must adopt remedies to these problems which are perceived by the masses as equitable.

Realizing that a friendly, economically stable Caribbean could only serve to enhance U.S. interest, one final question remains; namely, is the Caribbean Basin Initiative the optimum means by which America can restore economic vitality to the Caribbean region? Given that the program is a means to an

end and not the end itself, it seems to be potentially the best solution.

Just as the Marshall Plan revitalized an economically devastated Europe at the end of World War II, so can the C.B.I. rejuvenate the Caribbean Basin region. The U.S. approach toward European restoration was absolute as can be clearly seen by the commitment of virtually unlimited funds. The return on investment was considerable, and few could argue that without those massive allocations of aid the complexion of Europe would be very different today. Although the Caribbean hasn't suffered the ravages of war, it is similarly in need of economic assistance. To approach this region with any less resolve than we addressed post-war Europe postpones the problem to a future date, at which time the ability to control the outcome may be significantly less favorable.

Jamaica is an island undergoing a massive population transition. The younger Jamaican population is presently migrating from the rural districts to Kingston, and other urban centers in search of work, which generally isn't available. They form the nucleus for future political instability. Unsatiated expectations for social improvement or employment create a medium from which revolutions grow. The options and therefore the success, with which the government confronts this dilemma will in part be determined by the country's economic well being. To avoid confronting this situation merely postpones the inevitable, and ensures that,

when they occur, the circumstances of confrontation will be more violent and dramatic.

These disruptions to the political stability of friendly Caribbean nations could have drastic consequences upon vital U.S. security interests. The obvious geographical significance of hostile nations so proximate to America's vital sea lanes impose a potentially calamitous situation. Historically, we have been surrounded by nations that if not allied, were at least not hostile to U.S. interest. What additional security and economic costs would be imposed if the entire Caribbean region were composed of communist satellite nations like Cuba? In that regard, the future economic prospects of our neighboring states assumes a vastly more consequential role. Realistically, their economic vitality should be as important to the United States as it is to their own governments.

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